

Apple's Open Collaboration Environment

System 7 extensions promise simplified communications for workgroups. [See page 53](#)

10Base-T LAN adapters for workstations

The Test Center puts 13 network interface cards through their paces. [See page 66](#)

Short circuit in IBM laptop prompts recall

By ED SCANNELL

IBM's got a hot little laptop that is generating more heat than the company would like.

The IBM Personal Computer Co. last week issued a recall of some 150,000 of its Personal System/2 L40SX laptops based on reports that a small number of them have short-circuited.

In a handful of cases, when a system's insulation has been cracked or damaged, the short circuit has burned a hole in the machine's plastic casing. In most cases, however, the machine's circuitry and software was damaged or destroyed, officials said.

Only 15 incidents have been reported, all from Europe; none so far has been reported from the United States or Canada, and none involved injuries, an IBM representative said.

[See RECALL, page 97](#)

NT keeps client/server apps waiting

Database servers will be ready as soon as Microsoft ships delayed OS

By SCOTT MACE

ATLANTA — A traffic jam of client/server vendors is growing behind the drawn-out shipment of Windows NT, with frustrated users in tow.

As key pieces such as Advanced Server are still at least 90 days away, vendors at the huge NT booth here have pinned their ship dates on NT's release. Many have also intensified their beta testing and performance tuning after finding NT to be larger and slower than expected.

Many corporate users are eager to get started on their own application development. "A lot of people would love to deploy client/server applications on NT, but they are precluded from doing so until Microsoft ships," said John Tarbox, CEO of Canaan Analytics, a New Castle, Del., consulting firm.

Once NT ships, first out of the chute will be Windows NT versions of many popular database servers (see chart on page 97).



Windows World Coverage continues...

see pages 3, 6, 13, 17, 23, 25, 29, 30, 42.

Several client/server vendors, including Informix Software Inc. and Mozart Systems Corp., are delaying release of NT products at least until NT Advanced Server ships. Many others are closely tying their ship dates to the shipment of NT itself.

When each database server ships for NT, libraries to allow NT clients to connect to those servers are also due to ship, Windows World exhibitors said.

The NT world according to Microsoft

Microsoft brought NT into the world at Comdex last week, releasing the latest information about the platform.

Product	Shipping	Price
Windows NT (desktop version)	By July 22	\$495; \$295 upgrades
Windows NT Advanced Server	By Aug. 21	\$2,995; \$1,495 for six months
SQL Server for NT	Q3*	\$995 to \$14,995**
SNA Server for NT	Q3	\$1,495 to \$9,995**

*60 days after NT ships. **Pricing based on number of users.



Gates 3,000 NT applications due in the next six to 12 months

Because many customers' early NT applications will be modest in size and scope, companies such as Informix are tailoring initial releases only for smaller applications and developers.

Informix will release Informix-SE for NT for smaller LANs before the company's flagship Informix-On-Line database server is available.

[See NT, page 97](#)

cc:Mail for Windows upgrade to deliver rules-based routing

By CHERYL GERBER

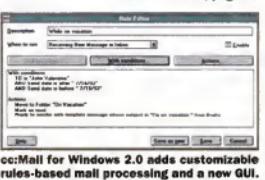
ATLANTA — Amid pressure from an increasingly competitive messaging market, Lotus Development Corp. will release two of its most strategic products starting next month — cc:Mail for Windows 2.0 and cc:Mail Wireless.

Lotus previewed an array of cc:Mail for Windows 2.0 features at spring Comdex last week, including a redesigned user interface, the use of rules with approximately 20

customization options, an improved text editor, and support for Microsoft Corp.'s Object Linking and Embedding.

The company also confirmed that it is developing a native X.400 Message Transfer Agent.

[See CC:MAIL, page 97](#)



cc:Mail for Windows 2.0 adds customizable rules-based mail processing and a new GUI.

IBM may initially ship PC DOS 6 without data compression utility

Big Blue wants time to ensure safety, OS/2 compatibility

By ED SCANNELL

ATLANTA — IBM's personal software products division (PSP) may release PC DOS 6.0 in late June without a data compression utility, although a version issued shortly after would include such a feature.

"Trying to sidestep the difficulties Microsoft Corp. has had with the DoubleSpace utility built into MS-DOS 6.0, IBM officials said here last week they are not about to make a quick decision about which compression technology to use."

"We are taking a little more

time because we want to be as safe as possible," said Martin Hewitt, the brand manager for PC DOS 6.0. The product was shown at spring Comdex last week.

Another reason IBM is not ready to commit to a compression utility.

[See PC DOS, page 97](#)

Apple, HP raise the curtain on portable communicators

By YVONNE LEE
AND TOM QUINLAN

Portable communicators from Apple Computer Inc. and Hewlett-Packard Co. will materialize within a week, as Newton and OmniBook 300 formally debut.

At the Consumer Electronics Show in Chicago this week, Apple will introduce its Newton personal digital assistant with pricing, distribution plans, and a list of services it intends to provide for three versions of the hand-held device. The products

will ship in July.

The Newton family will range in price from \$699 to \$1,250, sources said, with a variety of services and connectivity determinants determining the price.

At the low end will be a stripped-down version that does not include a modem or any free connectivity to AppleLink.

The midrange system, expected to cost around \$900, will include a PCMCIA-based radio

[See PORTABLE, page 97](#)

The first

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COMMUNICATIONS
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This One

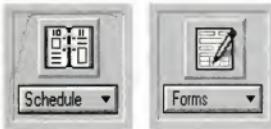


2XHH-W1J-8G78

filed, where it's routed after it leaves your desk. You can accept or reject meeting requests, of course, but you can also delegate them. You or your proxy can check for conflicts on any number of personal calendars across any number of networks — even across dissimilar computer operating systems — with a single keystroke.

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importantly, the program supports full directory services to greatly simplify the sharing of names between systems. And we offer diagnostic and management services to make configuring, monitoring and maintaining your system easier.

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but meetings, appointments, tasks and paperwork — all the basic, relentless stuff of business. It automates the flow of work and information through (and throughout) your company.

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CORPORATE OPERAT

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Organizations still driven by the telephone and the mail cart may see e-mail as the next logical step. But WordPerfect has now advanced the technology of e-mail to a higher level. WordPerfect Office "mail enables" not just messages,

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NEWS

Four firms buy in to Kaleida's ScriptX alliance

BY TOM QUINLAN

Four Japanese conglomerates became charter members of Kaleida Labs Inc.'s newly announced Manufacturer's Alliance last week, guaranteeing their advance looks at ScriptX and first crack at adapting the technology to specific consumer products.

In addition to Kaleida co-founders Apple Computer Inc. and IBM, Hitachi Ltd., Toshiba Corp., Mitsubishi Electric Corp. and Creative Technology Ltd. paid an undisclosed sum to become charter members of the Kaleida alliance.

"We'll find a way to work with other companies, but the charter members will absolutely get first call on our services," said Nat Goldhaber, president and CEO of Kaleida.

ScriptX is both a scripting language and a set of data format specifications that will let applications run on all hardware devices that support ScriptX.

For specific products, Kaleida will have to adapt the ScriptX architecture, Goldhaber said, giving charter members a possible marketing advantage.

Future alliance members will be able to use the technology but won't get the advance look.

According to sources familiar with the deal, the four companies paid between \$1 million and \$1.5 million each to get early access to Kaleida's ScriptX.

In addition to computers, Kaleida is fashioning ScriptX to work with a variety of consumer electronic devices that could include intelligent televisions, VCRs, or even game machines that are based on 32-bit processors.

Kaleida will ship an alpha version of ScriptX by year end to software developers, with hardware and software products appearing in time for the 1994 Christmas season.

The first ScriptX-enabled hardware device is expected to be announced this summer, when Toshiba and Apple will introduce a CD-ROM-based personal digital assistant that is ScriptX ready.

Applications will have to wait for the completed ScriptX specification, Goldhaber said.

Apple and IBM have already committed to incorporating ScriptX into their computers, Goldhaber said.

"That will give us a base of 5 million systems by the end of 1994 that are ScriptX compatible," Goldhaber said.

Vendors get in line to link NT with SNA

Wall Data's Rumba will bring APPC to IBM mainframes and AS/400

BY CHERYL GERBER
AND STUART J. JOHNSTON

ATLANTA — Several vendors previewed a broad range of connectivity options for linking Microsoft Corp.'s Windows NT and IBM SNA host systems here at Windows World last week.

Many packages take special advantage of NT's pre-emptive multitasking capabilities, enabling users who are accessing multiple host-based applications to maintain their links to multiple sessions.

Among them, Wall Data Inc. introduced Rumba software development products to make it easier to build NT graphical front ends to host-based Advanced Program-to-Program Communications (APPC) applications, officials said.

Rumba will bring APPC capabilities to NT users hooking to IBM mainframe, AS/400, and RS/6000 systems. Rumba tools will also be available for Microsoft's Visual Basic and PowerSoft Corp.'s PowerBuilder.

"We've enabled both PowerBuilder and Visual Basic to make APPC calls so those development tools can be used to write the GUI side of an APPC application," said John Wall, Wall Data's vice president and founder. "In the past, programmers were limited to C or C++."

The Wall Data applications linking NT and IBM will run on Intel Corp., MIPS Computer

Systems Inc. RISC, and Digital Equipment Corp.'s Alpha systems. The NT version will ship within 60 days of NT's ship date, said Douglas Engle, product manager for Rumba tools.

Later this year, Wall Data will release other APPC-based tools that will enable administrators planning to move host-based applications to LANs to manage legacy systems from a NT desktop, a company source said.

At a separate booth, Comdex

also showed a port to NT of its 3270 connectivity software, Extra for Windows. "The Attachmate Extra port to NT uses the Microsoft Data Link Control [DLC] API to communicate between NT and the IBM host," said Joel Rosenberger, Attachmate development manager.

The Bellevue, Wash.-based firm will ship its version within 90 days of NT's shipment, Rosenberger said. Pricing has not been determined.

Digital Communications Associates Inc. said it will ship its Irma WorkStation for Windows NT within 90 days of NT's ship date. It will cost \$495 and support up to 10 concurrent IBM 3270 sessions. It provides connectivity to Distributed Function Terminal, Synchronous DLC, X.25, and 802.2 over Token Ring or Ethernet links, said a DCA representative.

DCA will also manufacture Microsoft's SNA Server for Windows NT for resale by Microsoft.

Designer 4.0 for Windows debuts

Lea Ellermeier, product manager for Designer 4.0, announced the new version of the Windows-based graphics package last week at Comdex. Micrografx Inc. plans to ship Designer 4.0 in June for \$695 (\$149 for current users), offering users a new interface, desktop publishing features, scanner support, and a bitmap editor. See "Designer 4 gets easier interface," May 24, page 8.

The Richardson, Texas-based company said the new version of Designer will perform color separations, under-color removal, and trapping. It also offers a graphics database with more than 13,000 clip-art images.



LEA ELLERMEIER

AT DEADLINE

Apple's Unix server to get Informix database

Informix Software Inc. will port eight of its database applications and development tools to Apple Computer Inc.'s Unix-based Apple Workgroup Server 95. Programs to be ported to the server include Informix-OnLine, a high-caliber database engine with on-line transaction processing and multimedia capabilities; Informix-SE, a SQL-based engine for small- to medium-range applications; Informix-Star, a distributed database software program for manipulating multiple databases; and the Informix-4GL family of fourth-generation language and programming tools. Pricing has not been finalized. All tools should be available in the third quarter.

— Torsen Busse

32-bit CorelDraw 5 goes multiplatform

Corel Corp. said last week it is working on a 32-bit version of CorelDRAW 5 that will run on Windows NT, OS/2, Unix, and Macintosh. The Ottawa-based vendor said it plans to release CorelDRAW 5 — with a common code base portable to all 32-bit platforms — in May of 1994. There will not be an OS/2 version of CorelDRAW 4, but the price on CorelDRAW 2.5 for OS/2 has dropped to \$199.

— Jeanette Borzo

Sybase to port products to SCO Unix

Expanding the scalability of its database products, Sybase Inc. last week said it would port its System 10 products to The Santa Cruz Operation Inc.'s Unix. The products, which include SQL Server 10, Open Client, Open Server, and Back-up Server products, are scheduled to ship in the first quarter of 1994. System 10 and the Back-up Server product will be bundled with prices starting at \$3,750.

— Yvonne Lee

Tandy ditches PC spinoff, sells to AST

AST Research Inc. last week agreed to buy Tandy Corp.'s PC manufacturing business, including subsidiary Grid Systems Inc., for about \$175 million. If it completes the purchase, AST will become the nation's fourth-largest PC maker behind IBM, Apple Computer Inc., and Compaq Computer Corp., according to data from International Data Corp. AST and Tandy's PC manufacturing operation were in the seventh and eighth positions last year, respectively. Talks between the two companies began after AST agreed to resell Grid's pen-based computer, the Grid Convertible, as the AST PenExec. At the time, Tandy planned to spin off its unprofitable manufacturing business and focus on its core retailing operations.

— Steve Poillilli

Northgate, Unisys will bundle OS/2 2.1

On the heels of its bundling deal with AST Research Inc., IBM's personal software products group last week announced that Northgate Computer Systems Inc. and Unisys Corp. will also optionally bundle OS/2 2.1 operating system with their hardware. Although Version 2.1 will not be available in volume until June 14, PSF president Lee Reiswig said his company is taking between 6,000 and 7,000 orders a day for the product over its 800 number.

— Ed Scannell

Perspective 93 conference postponed

Perspective 93, an *InfoWorld* conference for PC managers, has been postponed, the event's organizers said last week. The conference, which was to have been held June 6-9 near San Francisco, received positive response from readers but not many preregistrants as expected, organizers said. The conference may be rescheduled.

"Our readers were generally enthusiastic, but we found we didn't give them enough time to plan for the conference," said Stewart Alspach, editor-in-chief of *InfoWorld*.

Registered attendees will receive registration fee refunds promptly. Also pending.

For further information, registered attendees can call (800) 848-5381; for other Perspective information, call (800) 633-4312.



Distributed Thinking / Stewart Alsop

Perspective conference still sounds good to us, how about you?

InfoWorld has postponed its new conference, Perspective 93. If you have been reading my column over the past few months, you know that we have been putting together what we believed would be a truly important event for our readers.

We had developed what I (ever so humbly) believe was the best-ever program for PC systems managers — on-stage demonstrations of important custom applications, strategic visions of key network operating systems, vendors, advice and counsel from experts and our own columnists and staff, and informal demonstrations of key products. We promoted the conference as aggressively as we knew how, by advertising in *InfoWorld*, sending brochures and information to all of our 220,000 qualified readers, and by following up with direct telemarketing. And we received an enthusiastic response from everyone — the readers of *InfoWorld* (more than 4,000 asked for more information about the conference), the vendors who had agreed to sponsor the event, the speakers who agreed to invest their time and

effort in preparing unique presentations, the companies that signed up to demonstrate their products.

But we missed something, because we did not get enough paid registrations to actually produce the kind of event we had promised. We will be following up with many of the people who expressed interest to find out what we did miss. We think that we made two mistakes: We didn't give our readers enough time to plan to come to the event, and we scheduled the conference at a time of year when our readers are already very busy. Spring Comdex and Windows World was last week; PC Expo will be held at the end of June. And then there is a host of specialized shows and events.

It's always hard to admit when you've made a mistake, but we thought it would be better to postpone the event rather than hold a disappointing one. We still want to find a way to get our readers together to talk about the issues you face day to day. If you have any ideas about how we can find a more appealing way to do that, please let us know. Or, if you have an opinion about how we presented Perspective 93, please send me a message at salsop@mci.com or at my fax number (415) 312-0537.

ELECTRONIC MAIL HECK

Perhaps phone companies should just stay out of E-mail. The pay phones AT&T makes that allow you to plug a modem into a data port (both the wall models and the tabletop credit-card-only models) require the user to dial some portion of the number manually. Didn't the designers of the phones ask anybody whether modems were capable of dialing the whole number without any help?

Now MCI Mail, the E-mail subsidiary of MCI Communications, has managed to make its Compuserve gateway more difficult to use. What's more, the company actually seems proud of the fact. The old gateway required an address like the one below:

TO: Pat Messenger
EMLS: Compuserve
MBX: 99999,999

The new MCI Mail gateway has adopted the X.400 format, which means messages now have to be formatted as follows:

TO: Messenger
EMLS: Compuserve
MBX: P=CSMail

MBX: DDA-ID=99999,999

With the new gateway, when you receive a message from a Compuserve user, the message header says it was sent by "X.400 Originator." The old gateway would actually tell you the name of the sender. And, despite the new gateway, MCI Mail still refuses to forward Internet messages to the addresses at compuserve.com, so you have no choice about how to send messages to Compuserve.

As a frequent MCI Mail user, I can't say I appreciate the idea that this new gateway requires an extra addressing line (one that is meaningless to the user and redundant to the first line). I also don't much like the notion that now I have to remember to add the phrase "DDA-ID=" to the second mailbox line.

I've heard lots of statements to the effect that X.400 is a real standard that we can all adopt; so why the heck is it such a complicated format for addressing mail? Even Internet addressing is easier to figure out than X.400. Couldn't we make progress in the form of making E-mail easier to use, rather than more difficult?

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World Class...



Deborah Flores, Senior Network Consultant IOLAB, Claremont, California

The MicroNet Team. World Class Service and Support.

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 **COMDEX** &  Windows World NEWS

HP adds 50 Vectra PC models

High-end entries to have infrared wireless connectivity

By STEVE POLILLI

ATLANTA — Hewlett-Packard Co. last week revealed plans to expand its Vectra PC line with 50 new models that offer integrated networking, PCMCIA slots, and infrared wireless connectivity.

The expansion of the Vectra family reflects the growth of the company's PC business, said Kathleen Peck, an HP U.S. product manager for personal computers. That business more than doubled in the first half of

1993 from the same period a year earlier, she said.

Previously two families, the Vectra product line has grown to four. All models will ship in June except the Pentiums; they will all sport local bus graphics and a 486 or faster processor. A PCMCIA slot option is available on each system.

At the top of the line is HP's Pentium system. A full-size cabinet will include two Peripheral Component Interconnect slots, two ISA slots, infrared communications, and an integrated network adapter. The Pentium will ship in August or September.

A level down from the Pentium PCs are the XM models, which offer a proprietary local bus implementation, a full-size cabinet, and built-in infrared and Ethernet communications.

The M models are housed in a full-size cabinet; those carrying an MI designation have an Ethernet network interface card integrated on the motherboard. N models use a slimline cabinet, with NI models carrying integrated network interfaces.

The M models will range in price from \$1,000 to \$2,000 without monitors; the N models will cost approximately \$100 less

if similarly configured. An XM system with 4MB of RAM, a 120MB hard drive, and a 33-MHz 486SX is \$1,500 without a monitor.

The infrared communications, called Serial InfraRed (SIR), will be included on the more powerful Vectras and on certain HP peripheral devices. HP's palmtops have always had the patented infrared eye to transfer data to other systems.

The SIR technology is cheap, fast, and uses little power, said Eng Tan, a business planning manager in HP's personal systems lab in Bristol, England. It is highly useful for localized data transfer operations such as connecting a desktop or palmtop system to a printer or passing data between systems in close proximity. Tan said, SIR supports speeds of up to 115KB per second, approximately 50 times faster than the speed of a 2,400-bit-per-second modem. Tan said. Other vendors may license SIR for a one-time fee of \$5,000.

"We would like to see this become used in a range of products," Tan said. "We see a world where office equipment like copiers and faxes will be connected."

A Kodak moment with Kerrey

Sen. J. Robert Kerrey, D-Neb., was scouting out the new technologies at spring Comdex last week. Although he no doubt was at the show to gather data for the technology subcommittee he serves, Kerrey seemed especially taken with *InfoWorld* photographer Sally Wiener Grotta's Kodak DCS digital camera. Kerrey is a member of the Appropriations subcommittee of the Commerce, Science and Transportation Committee, which is considering a bill to fund the data superhighway. The superhighway is a project to support wide area communications for business, education, and consumer use.



IBM speeds delivery of multiprocessing in OS/2

Added performance to match NT's

By ED SCANNELL

ATLANTA — IBM announced last week stepped-up delivery of the symmetrical multiprocessing capabilities it plans to incorporate into OS/2 2.1 this year.

The early delivery is not in response to Windows NT but is being done to tackle performance issues, said Lee Reiswig, president of IBM personal software products (PSP) group.

Coincidentally, Windows NT — the other major operating system to sport such sophisticated capabilities — was also being introduced here at spring Comdex.

Originally, IBM's PSP group did not plan to introduce into OS/2 such capabilities until shipment of its microkernel-based version — Workplace OS — due the first half of 1994.

"We have coprocessed systems now that are limited in our server systems," Reiswig said. "This would be more generic support that could benefit applications in general."

PSP showed OS/2 2.1 performing four-way symmetrical multiprocessing on an AST Research Inc. server. The AST server used four 50-MHz 486 processors.

One of the short-term problems IBM will face in testing symmetrical multiprocessing is the lack of available applications that have been tested with multiprocessing.

"What works in a single-processor environment does not

necessarily work in a multiprocessor environment," Reiswig said. "There will have to be a fair amount of applications work done for NT and OS/2 to make even these 32-bit apps be multiprocessing apps."

PSP will begin formal beta testing of its symmetrical multiprocessing support this summer among corporate customers and application software developers.

The finished product will be delivered by year end, most likely as an add-on capability.

Also shown last week for the first time was a alpha version of Workplace OS with an OS/2 look and feel, which ran on a Pentium-based system. The complete version will be capable of seamlessly displaying multiple personalities, including those for Unix, Windows, and DOS.

To run Workplace OS, users will need at least a 486-based system with 8MB to 12MB of RAM.

Although it can be used as a client and/or a server, IBM will initially market Workplace OS as a server product.

PSP officials continue to watch for market acceptance of Windows NT before they commit to putting NT capability into Workplace OS.

Beta testing for the core product begins next month, but testing for the DOS and Unix personalities will not start until the third quarter, with testing for the OS/2 personality scheduled for the fourth quarter.



SALLY WIENER GROTTA

HP has completely revamped its Vectra PC line with 486 and Pentium-based models.

NetWare Client for Windows NT readied

By STUART J. JOHNSTON

ATLANTA — Users here got their first public demonstration last week of a Novell Inc. technology that will let them use Windows NT as a NetWare client or applications server.

Novell will deliver its NetWare Client for Windows NT within 60 days after Microsoft Corp.'s Windows NT ships this summer, said Bob Ross, senior

development manager for the product.

It will include compatibility with all Novell's network services including imaging, telephony, and messaging, and it will work with Novell's coming products for software distribution, licensing, and network management.

The 32-bit client software, which lets NT software access data from the NetWare LAN, is designed to work with a variety of Novell transport protocols, including IPX/SPX II. However, it will not work with the IPX/SPX protocols provided by Microsoft on the NT CD-ROM distribution disk, Ross said. Users will need protocol stacks provided by Novell.

Microsoft provides the protocols to support those applications that bypass the NetWare requester and write directly to the protocol stacks. A Microsoft representative said the company expects most NetWare customers will use the Novell protocols.

Nonetheless, Ross insisted that Novell and Microsoft have been "cooperating very closely"

to ensure NetWare and NT work well together. But he did not back away from the Provo, Utah, firm's long-standing position that NT is not a great server or networking system.

"NT makes sense as a client but not as a network operating system [because] the two [tasks] run counter to each other," Ross said. "An applications server is between both worlds, and the market will determine [whether NT succeeds at that]."

The NT client also supports symmetrical multiprocessing machines and tightly integrates with the NT user interface, appearing as another set of NT services.

For example, NetWare's log-in service will work with NT's security but let administrators set individual log-ins for each NetWare server, Ross said.

Print Manager also "dovetails in" with NT, enabling users to start, manage, and reinitialize print jobs within NT.

Novell's NT requester is written in C so it can be moved to MIPS Computer Systems Inc. and DEC Alpha versions of NT.

Correction

Due to editor error, three products that qualified for the Buyers Assurance Seal in the May 24 text retrieval comparison (page 123), did not receive the seal. *diSearch*, *sys* for Windows, and *Zyndex* for Windows all qualify for the seal. *InfoWorld* apologizes for this omission.

In the May 24 supplement on Windows NT (page S92), a headline erroneously identified David Thacher as Paul Thacher. *InfoWorld* regrets the error.

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Some PowerPC Macs to use PCI

BY STEVE POLLINI

ATLANTA — Apple Computer Inc. announced at Comdex last week that it will migrate future generations of PowerPC-based Macintoshes from its NuBus architecture to the Peripheral Component Interface (PCI) bus.

PCI local bus is expected to soon become a major standard in the PC market, and a number of vendors at the show announced products embracing it.

Intel Corp., currently the only vendor producing PCI chips, last week released pricing for its PCI chip set. Now available in small quantities, pricing for 10,000 sets runs from \$45 to \$98 depending on processor and ex-

pansion bus.

Apple will not quickly drop NuBus; instead, it will first bring out PowerPC systems using the existing Mac bus and later move a second generation of PowerPCs to the PCI.

Apple expects to release the first PowerPC Mac models in the first half of 1994, said Ross Ely, Apple product manager for desktop RISC systems.

The key reason for choosing PCI was its 32-bit data path and its 132-MB-per-second (Mbps) maximum speed, Ely said. Maximum NuBus speed is 40Mbps.

"We did a huge study of all the bus options and determined what we would need down the road," Ely said. "Video and multimedia applications really

push the need for speed. That's why we will be transitioning to PCI," he said, noting that NuBus and PowerPC are compatible, if not complementary.

Peter Hartsook, editor of *The Hartsook Letter*, a Macintosh market research service, agreed that NuBus can hamper advanced graphics applications.

"The NuBus really becomes a bottleneck when you talk of large bandwidth and fast clock speed," Hartsook said. "PCI takes care of those concerns."

Ely also said PCI is attractive because it can easily handle plug-and-play functionality, an alternative 3.3-volt PCI specification is being finalized, and "a plethora" of peripheral vendors are expected to endorse PCI.

Hardware to enable Fast Ethernet

Faster adapters and hubs expected by end of year

BY JAYNE WILSON

Users grappling with network traffic jams could get relief by the end of the year when the first "Fast Ethernet" products are expected to ship.

Fast Ethernet promises to bring 100Mbps to the desktop for less than twice the cost of 10Mbps Ethernet.

3Com Corp. last week gave one of the first public demonstrations of the technology and committed to delivery by next year (see chart).

"We think this [demo] proves Ethernet doesn't break at 100Mbps per second [Mbps]," said

Pat Conlon, 3Com's project manager for 100Mbps Ethernet.

To implement Fast Ethernet, customers with conventional Ethernet would buy PC adapter cards and hubs. These products will incorporate processors and repeaters that enable existing Ethernet to run at 100Mbps. Some chassis hubs may be upgradable to 100Mbps capability.

Fast Ethernet aims at the 20 million Ethernet installed base by using existing network management and cabling. Other high-speed technologies need different cabling and are geared to backbone implementations. Users at Stanford University

Hospital, in Palo Alto, Calif., are looking forward to Fast Ethernet. "Sending CAT scans, ultrasounds, and X-rays over the network bogs down an ordinary Ethernet," said Frank Evans of the clinical engineering unit.

"As networked PCs proliferate and today's more powerful PCs and applications drive more data onto the network, Fast Ethernet provides a simple migration from 10Mbps," said Doug Spreng, a 3Com vice president.

3Com — along with Grand Junction Networks Inc., Sun Microsystems Inc., and others — is a proponent of a standard for Fast Ethernet called Carrier Sense Multiple Access/Collision Detection (CSMA/CD), which would speed up the existing Ethernet Media Access Control (MAC).

An alternative view called 100 Base VG — backed by Hewlett-Packard Co., AT&T, and others — would use switching technology to replace the MAC.

CSMA/CD limits links between hubs and PC nodes to 100 meters; longer distances will require bridges and repeaters. 100 Base VG can extend beyond 100 meters and requires no bridging.

The IEEE will decide on a standard for Fast Ethernet in July. However, observers say it is possible users will have two standards from which to choose. Vendors from both camps vow to keep prices affordable.

Other vendors working on Fast Ethernet products include Grand Junction, HP, Ungermann-Bass Inc., Wellfleet Communications Inc., Davicom Communications Inc., and Optical Data Systems Inc.

— Steve Pollini contributed to this report.

Quattro Pro DOS upgrade adds 'notebook' interface

BY DOUG BARNEY

In a move hailed by DOS diehards, Borland International Inc. is prepping an upgrade to Quattro Pro for DOS that boasts three-dimensional capabilities similar to those pioneered by Lotus Development Corp.

Slated to ship this fall, Quattro Pro for DOS, Version 5.0 should include the notebook interface for managing worksheets, a feature that debuted in Borland's Windows spreadsheet, company sources revealed last week.

The product is aimed at the vast base of 1-2-3 for DOS users, which Lotus is trying to move to its Windows version, sources inside the company said.

Although Lotus is largely focused on Windows, it began giving nondisclosure previews last week of its upcoming DOS release. This upgrade to 1-2-3 for DOS, Release 3.4 reportedly boasts a dramatically new, more graphical interface.

Borland is catching up with Lotus by also embellishing its spreadsheet with 3-D capabilities, which operate from the new notebook interface. The notebook lets users work on multiple worksheets simultaneously, each with a tab and a descriptive name. Users can toggle between sheets by clicking on the tabs.

ture, users can copy and paste worksheet models from one page of the notebook to another. And like its Windows counterpart, the DOS version allows users to drag and drop pages.

Quattro Pro for DOS and Windows user Dan Atkins uses the notebook feature to create multiple sheets with the same formatting. He can then link the sheets to perform sums and other calculations across the multiple sheets.

"The notebook metaphor makes it a lot like 3-D product. It gives you that extra dimension," said Atkins, a senior researcher for United Health Care Corp., in Minneapolis.

Although Quattro Pro for DOS has not been completely rewritten, it did receive an infusion of Turbo Pascal code to implement the notebooks, according to Borland developer sources.

The DOS product should be part of a simultaneous upgrade with Quattro Pro for Windows 5.0, renamed from 2.0 to reflect its parity with the DOS version, also slated to hit this fall. Quattro Pro for Windows 5.0 is in small-scale beta testing, and the DOS version will enter full beta in the next few weeks.

The upcoming Borland DOS product should run in as little as 512KB of RAM and on 8088 processors when running in character mode.

Alliance with HP gives Next marketing muscle, credibility

BY CATE CORCORAN

SAN FRANCISCO — An alliance with Hewlett-Packard Co. gives Next Inc. credibility and an enterprise strategy, but it won't necessarily win over corporate users.

Next announced the HP alliance at NextWorld Expo here last week, as it started shipping NextStep for Intel.

The two companies will jointly market the PC-based object-oriented development environment to financial companies starting this month, while Next works to complete an HP PA-RISC version of NextStep for release in mid-1994.

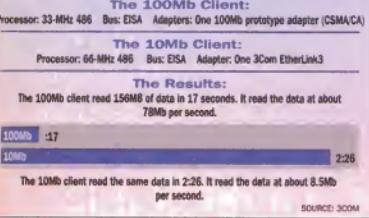
NextStep's Portable Distributed Objects and network management software running on HP's Unix will ship this year.

In the past NextStep was praised for its development environment, but many corporate users were reluctant to commit to its proprietary hardware and questioned the company's long-term viability.

But the move to open hardware and HP's service and stability could lure new users to Next, users and consultants said. "HP is very good for Next. It's a very rigorous company," said William Young, senior systems engineer for Trident Data Systems of Los Angeles.

On the downside, HP and Next will compete against Sun Microsystems Inc., which has dominated the trader portion of the financial services market. But Ruane Ernst, HP worldwide director of financial services marketing, sees an opening. "A lot of these users are faced with dramatic changes anyway, as Sun is going to Solaris [2.0]," he said. "If they have to consider Solaris, they may as well consider us."

Next also announced at the show a \$299 NextStep 3.1 for Intel evaluation kit is available until July 31; NextStep for Intel 3.2, with updated drivers, will ship in the fall; and a video codec object, NextTime, will ship next year.



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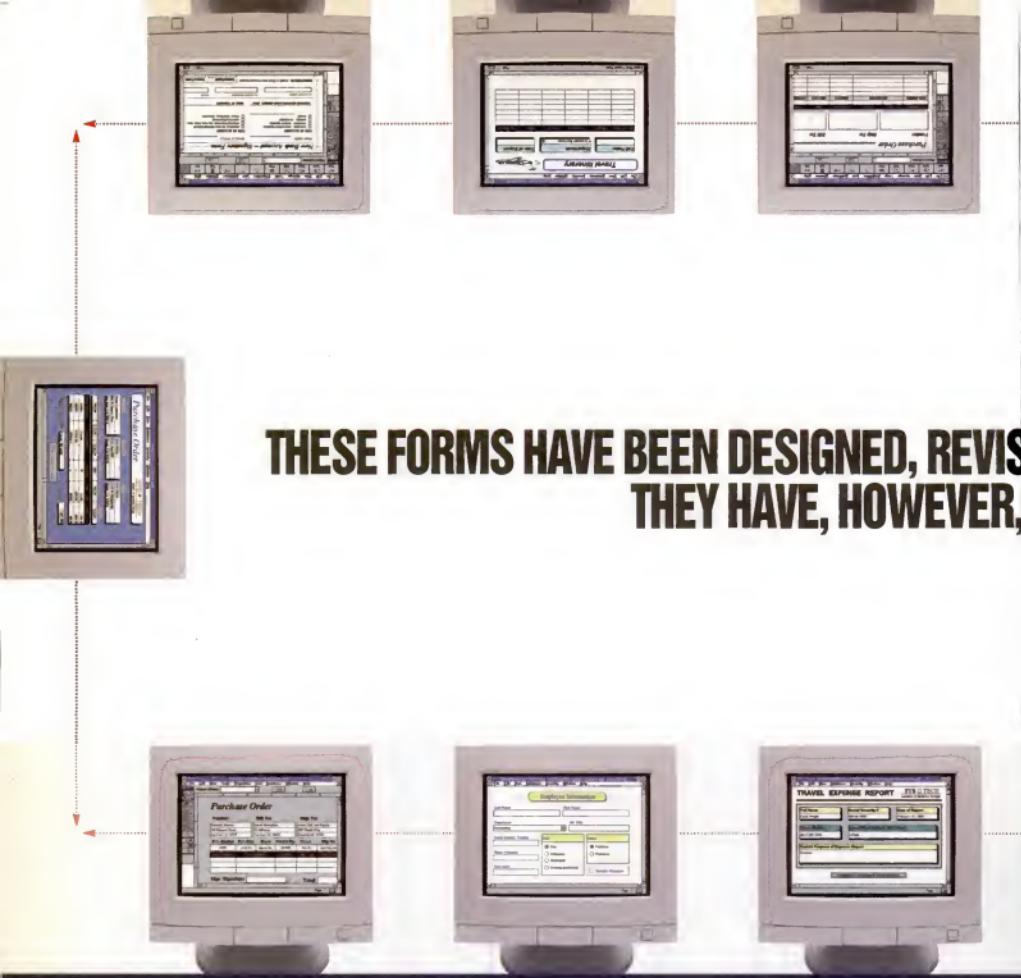
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Users praise NT's graphics support at Comdex

BY SHAWN WILLETT
AND JEANETTE BORZO

ATLANTA — NT promises to paint a rosy future for graphics professionals, but users shouldn't expect a full palette of NT applications soon.

At Comdex here last week, vendors and allies touted NT's benefits for graphics work: full 32-bit addressing, multitasking, and portability to powerful RISC platforms.

"I have a 32-bit machine. Why not have a 32-bit operating system?" said Jamie Cook, a photographer who uses Altamira Software Corp.'s Composer and came by to see the NT version of the new photo-to-composition package. "With multitasking I can work on two objects at once. It is a big advantage," he said.

Altys Corp., Altamira, and Autodesk Inc. were among the vendors showing their graphics applications running on Windows NT.

sion of Windows known as Chicago.

"You can get 90 percent of the benefits of NT by writing to one of the other Windows 32-bit APIs," said Eric Lyons, product manager for Altamira's Composer product. Microsoft has sent conflicting signals as to whether Chicago or NT will be the next step in Windows

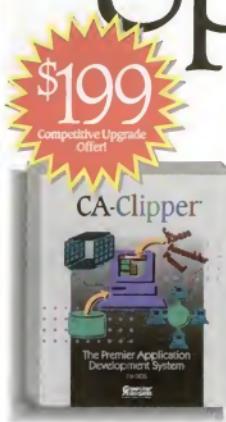
client platforms, Lyons said.

"There are other fish to fry in the Windows market," said Bill Caffery, vice president and director of the Gartner Group's advanced technology group, in Stamford, Conn. "We think NT has a long life ahead of it, so why should any of Microsoft's partners

try to sprint the first mile?"

As a caveat to graphics users thinking of moving to NT, vendors and users said running Windows 3.1 applications on NT can mean a performance hit depending on the processor used. NT must perform the equivalent of an emulation to run Windows 3.1 applications, slowing graphics applications from 10 to 30 percent.

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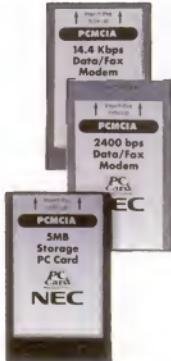
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NEWS / SOFTWARE

Pipeline

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Abacus II PC for DOS ships from A.S. Inc.

An accounting package from A.S. Inc., formerly Abacus Systems, offers job estimating and costing, inventory and order entry, and payroll and taxation. Abacus II PC has no modules but is a complete package that retails for \$995 for a single user and \$10,995 for 10 or more users. (800) 992-0616.

Pilot Software Inc.'s FCS for Windows is a multiuser LAN-based financial application modeling and analysis system that provides host- and PC-based business modeling tools. A license for up to 25 users costs \$39,000. (800) 944-0094.

UPGRADES

Microsoft Bookshelf available for 1993

Users of the 1992 edition of Microsoft Corp.'s Bookshelf can upgrade for \$49 to the 1993 edition, which is shipping now for \$195. The latest edition of the CD-ROM-based product, which offers seven reference books to Windows users, reflects recent geopolitical changes in Eastern Europe. (206) 882-8080.

ANNOUNCED

PageAhead readies InfoPublisher 2.0

PageAhead Software Corp. plans to release InfoPublisher 2.0 next month, offering users an Open Database Connectivity-compliant program to gather, sort, and format database information prior to importing it. InfoPublisher will cost \$295; a developer's kit is \$495. (800) 967-9671.

Timeworks Inc. demonstrated at Comdex last week a 32-bit document publishing technology offering high-end graphics tools, a user-definable level of undos, drag-and-drop colors and styles, and style sheets that apply down to the character level. Timeworks plans to release the yet unnamed technology on a variety of platforms in the second quarter next year. (708) 595-1300.

Deneba Systems Inc. plans to release Canvas 3.5 for \$399 in August. This version of the Macintosh-based drawing program will offer new text flow features, style sheets, line connections that are maintained when users move the connected objects, erosion features, and support for pressure-sensitive tablets. Users of Canvas 3.0 will be able to upgrade for \$99. (305) 596-5644.



Macromedia's Director Player 3.1 for Windows lets multimedia developers convert existing Mac titles to Windows-ready titles.

Director for Windows upgraded to Mac level

Player features more interactivity

BY KELLEY DAMORE

ATLANTA — The latest version of Macromedia Inc.'s Director Player for Windows, demonstrated last week at Comdex, gives the Windows multimedia market a jump start for developing multimedia titles and demonstrations.

Beta testers of Version 3.1 lauded its increased interactivity, which previously was seen only in the Macintosh version of Director Player. Riley McLaughlin,

lin, a developer at JRA Interactive, in Olympia, Wash., has tested the product for the past six months and says Director Player to create multimedia-based demonstrations on the Macintosh and PC platforms.

In his part MacLaughlin had to trim his Mac-based presentations because the Windows player could not provide the same functionality. With the new version, the interactivity and palette controls are en-

hanced, he said.

"[The new version] is a major advance," McLaughlin said. "One of the best things is that it lets me pull images as I need them from storage rather than load a whole movie into RAM off the bat."

Director Player consists of a Mac-to-PC conversion utility that runs on the Mac and a runtime module on the PC. The program supports Apple QuickTime and Microsoft Video for Windows.

Director Player for

Windows is priced at \$995.

A bundle with the Macintosh version is \$1,795. Owners of previous Windows versions can upgrade for \$199.

An update to the Mac version, Director Player 3.1.3, includes fixes for such problems as the flashing controller with QuickTime 1.5. It costs \$15.

Both products are available now, officials said.

Macromedia, in San Francisco, is at (800) 288-4797.

include a router for Sybase SQL Server free of charge.

Users who take advantage of this offer can upgrade to the Corporate Edition, which includes TeamWindows, for \$1,500, officials said.

The company will also offer Gupta Quest for \$395, \$200 less than its retail price.

Powersoft Corp., another tool vendor, said last week it has eliminated its per client and per server run-time licensing fees

Numero 2 boasts visual script tool

Pen tool eases form development

BY YVONNE LEE

A visual scripting system in Pen Magic's Numero 2.0 helps developers create automated pen-based forms that export information to other data formats, including Excel, 1-2-3, and plain or comma-delimited text.

Developers can also create scripts that automatically execute as users fill out parts of a form.

Another automation feature helps users fill in large forms by entering data onto small sheets, or "chits." For example, users could fill in an expense report form by typing in individual chits about expenses. Scripts calculate the information on the main form.

Other features make the program easier to use, including the ability to create choice lists to enter data into a file, support for multiple page documents, integration with the Perspective address book, more custom pens, and an easier way to insert TIFF images.

Numero 2.0 is scheduled to ship June 14 for \$399. Current users can upgrade for \$99 through June 30 and \$149 after that. With a 10-license pack that is priced at \$1,000, developers can attach run-time versions of Numero 2.0 with their forms.

Pen Magic, headquartered in North Vancouver, British Columbia, Canada, can be reached at (604) 998-9982.

Developers create MagicScript forms by drawing lines to show the processing order.

for PowerBuilder 2.0.

Powersoft is lowering the price of the PowerBuilder Development Environment for DB2 from \$3,895 to \$3,595 and additional Database Development Kits for DB2 from \$1,495 to \$995.

The moves will broaden the client/server market, analysts said.

"They are structuring the pricing to grow the market and introduce more people to the

ing a button. A Post button moves totals and summary items to a summary sheet. An Export button automatically saves data into other data formats, including Excel, 1-2-3, and plain or comma-delimited text.

Developers can also create scripts that automatically execute as users fill out parts of a form.

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Gupta, Powersoft cut prices of client/server products

BY KELLEY DAMORE

In a move to make client/server technology available to the masses, two leading tool vendors reduced prices on their existing products.

Gupta Corp. recently dropped the price of its SQLWindows 4.0 Standard Edition to \$199 for registered Microsoft and Sybase SQL Server users, \$1,795 less than the original price. Until July 31, Gupta will

technology," said Brent Williams, director of PC software for International Data Corp., in Mountain View, Calif.

"Powersoft has increased competition from Visual Basic and needs to abandon its run-time fees, since Visual Basic is one-tenth the cost and has no run-time fees."

Gupta, in Menlo Park, Calif., can be reached at (800) 444-8782. Powersoft, in Burlington, Mass., is at (617) 229-2200.

API forms Windows-like apps

BY DOUG BARNEY

Basic and C programmers can now build applications that access remote data through generalized message handling and plug that information into a spreadsheet with DataTable, Version 2.0 from ProtoView Development Co.

DataTable can create spreadsheets that mimic the look of other Windows spreadsheets such as Microsoft Excel, the company said. Programmers can set fonts and colors for cells, columns, rows, and tables. It can handle up to 2 billion rows for serious number crunching.

DataTable can be used from within Microsoft's Visual C++ and Visual Basic, and can reportedly access any database through generalized message handling. Custom data entry and display screens can be built,

and an array of operations can be performed, such as sorting, browsing, and formating.

Applications developed with

DataTable can access any database through generalized message handling.

DataTable can be distributed free of royalty fees.

DataTable joins another recently announced spreadsheet technology from the DS Group Inc. of Greenwich,

Conn. DS Lab is dubbed a visual spreadsheet because it uses symbols to represent standard modeling elements and arrows to show relationships between numbers. Users click on these symbols and arrows to build a graphical representation of the model.

The product, designed to complement rather than replace spreadsheets, is \$195 for an entry-level version and \$995 for DS Lab Pro, which is designed for larger, complex models.

DataTable 2.0 requires Microsoft Windows 3.1 running in protected mode and sells for \$249.95, with an introductory price of \$149.95 until July 31. Source code is available at a \$149.95 introductory price.

ProtoView, in Dayton, N.J., can be reached at (908) 329-8588. The DS Group can be reached at (203) 861-1833.

Third-party vendors unleash a handful of add-on tools for Visual Basic update

BY KELLEY DAMORE

Third-party application development vendors were quick to follow Microsoft Corp.'s debut of Visual Basic 3.0, providing developers with custom controls and add-on products for this client/server tool.

* Sheridan Software Systems Inc. announced an add-on tool that takes advantage of Visual Basic's data access extensions. The tool lets developers design forms for database applications using drag and drop to link table columns to bound controls. Using the Form Wizard, VBAssist can generate a form similar to the way Wizard works in Microsoft's Access database. VBAssist 3.0 retails for \$179.

* Indigo Applications Inc. introduced a function library that

can add text-search capabilities to any application developed with Visual Basic. The \$189 program, called Fast Text Search, provides a bridge for Clipper programmers who want to develop in Windows.

* Micro Data Base Systems Inc., of Lafayette, Ind., introduced an MDBS IV language interface for Visual Basic 3.0 that enables developers to create client/server applications under MS-DOS. The product will be available this fall.

* Micro System Options introduced a new version of 3D Graphics Tools, a set of three-dimensional object manipulation, color drawings, and rendering functions. A Visual Basic version costs \$95.

* Net Manage Inc. announced an interface to TCP/IP that

gives users a TCP/IP protocol stack to help write a network application. The Newt-SDK development kit for TCP/IP is priced at \$500.

* Software Interphase Inc. of Foster, R.I., offers a new version of its on-line help development system for Visual Basic 3.0. The program, Windows Help Magician, allows users to create and edit help source files, read and write Rich Text Format files, and test a help system. Its cost is \$199 for a single user.

* Speech Systems Inc. of Boulder, Colo., announced a custom control for Visual Basic that lets developers add speech recognition capabilities to applications. SPOT/VBX is part of the Speech Systems PE400 System Development Kit and ships in June for \$1,495.

In aggressive move to establish OS/2 as a true multimedia platform, IBM this month unveiled a raft of tools for corporate users to access video over networks and sort, query, and manipulate those images.



In conjunction with OS/2 2.1, IBM has fortified its multimedia offerings with image recognition and networking products.

Tools prep OS/2 for multimedia

BY KELLEY DAMORE
AND ED SCANNELL

In an aggressive move to establish OS/2 as a true multimedia platform, IBM this month unveiled a raft of tools for corporate users to access video over networks and sort, query, and manipulate those images.

Ultimedia Server/6000 network software, scheduled to enter beta testing in July, gives organizations a way to create and distribute a range of multimedia applications such as video on-demand, multimedia kiosks, and training applications across client/server networks.

"Passing along video on-demand over networks requires lots of bandwidth, something I think we can now guarantee with this product," said Scott Winters, senior technical director of multimedia for IBM's personal software products. "This should ensure high quality on the client side."

Ultimedia works on IBM's RISC System/6000 servers running AIX with OS/2-based

clients. Future clients to be supported include Windows, Macintosh, and AIX, Winters said.

So far, multimedia has been relegated to a few corporate applications such as training. But Winters indicated that would soon change due to growing interest by leading software vendors who want to include multimedia in their desktop productivity applications.

A number of development tools will be available for users to create applications. One is the Ultimedia Workplace/2 for integrating image, audio, and video objects with current SQL databases. Another is Ultimedia Builder/2, which creates multimedia presentation programs.

Next month, IBM will implement a beta program for an image-recognition software package that can classify, search, identify, and sort images by color, texture, shape, or layout. This program, called Ultimedia Manager/2, lets developers more quickly search through large computer-based libraries for images and graphics.

Common Ground beats Acrobat to the Macintosh market

BY JEANETTE BORZO

PC managers gained an option for saving time, paper, and money when No Hands Software shipped Common Ground 1.0 for the Macintosh this month.

The \$189 software lets users distribute electronic documents to other Mac users. Users can open the documents and view them on-screen as they were authored, whether or not they have the original application or the original fonts.

"This will make the electronic office more feasible," said beta tester Michelle Swartz, presen-

tations artist at Cisco Systems Inc., in Menlo Park, Calif. "I distribute a lot of [Aldus] Persuasion files. Common Ground maintains the integrity, color, and graphics of the files."

"This saves so much time," said beta tester Hank Beck, president of Printable Inc., in Stamford, Conn. "The distribution cost for a catalog is \$10 to \$20 a unit. For a CD-ROM, the distribution costs are about \$1.50."

Being able to distribute information electronically allows faster updates and greater efficiency, testers noted.

"The ability to copy and paste [from a Common Ground file] without having to use a scanner is really helpful," said an airline employee and beta tester. "We would like to put our manuals on the server."

A Windows version of Common Ground is due to ship this summer, and a competing product from Adobe Systems Inc. is due to ship to Mac and Windows users in June.

There are at least two key differences between Common Ground and Adobe Acrobat. Whereas Acrobat uses font substitution to mimic the fonts in an

original document, Common Ground duplicates the exact look of the fonts in its exchange format. Also, the recipient of an Acrobat document will need Acrobat to view the document. Common Ground users can enclose a miniviewer with each document so that the recipient doesn't need Common Ground for viewing.

Beta testers and analysts said both differences give Common Ground an advantage over Acrobat, but other issues may determine which of the programs becomes more significant as a document exchange standard.

"If No Hands could have gotten their Mac product out in February and their Windows product out now, Adobe would look pretty bad," said Pete Dyson, editor of the *Seybold Report on Desktop Publishing*. "But their Windows product isn't likely to hit until midsum-

mer."

Still, the option to distribute documents freely without knowing a recipient's applications is the primary point of an electronic document exchange system.

Based in Belmont, Calif., No Hands is at (800) 598-3821.

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Mozart 3.2 client/server development tool is ready for NT

BY KELLEY DAMORE

ATLANTA — Mozart Systems Corp., unveiled at Comdex last week, its client/server tool that supports both Windows NT and the Win32 platform.

Mozart 3.2, which will be released as soon as NT ships, enables front-end development on NT client/server applications. The company has been working with Pacific Gas & Electric Co. to create an NT client/server application. Their customer information service processes 1 million transactions per day at a rate of 50 to 200 transactions per second. The in-

formation system consists of 24 subsystems and 216 dialogs, PG&E officials said.

"With enterprise client/server, we were able to deploy the system for 95 percent under the original budget estimate," said Al Simila, manager of PG&E's systems construction and integration.

In addition to supporting NT, Mozart 3.2 has new functionality for creating graphical screens. In particular, it supports multiple fonts and a floating palette function.

With a single compiler, Mozart developers can build applications and run them under DOS, Windows 3.x, OS/2, and Windows NT, officials said.

On the back end, the tool supports Oracle, Gupta, SQL Server, and SQL Server for Windows NT.

Mozart 3.2 will cost \$6,000 for a development environment and \$500 per user for a run-time license. Customers can purchase the package with project or enterprise licenses, company officials said.

Mozart Systems, in Burlingame, Calif., can be reached at (415) 340-1588.



IBM, Phoenix pact lets clone makers license joint BIOS

BY ED SCANNELL

Hoping to cut the time and money it takes vendors to deliver IBM-compatible systems, IBM and Phoenix Technologies Ltd. jointly announced a BIOS licensing program and products.

The SurePath BIOS licensing program lets clone makers gain access to IBM's PC software compatibility interface to produce systems conforming to PC AT and Micro Channel Architecture (MCA) designs.

The software interface is made up of key elements such as IBM's BIOS and hardware compatibility interfaces, as well as the Setup Utility for both the MCA and PC AT bus designs.

With OEMs spending less time and money producing PC AT and MCA systems, users benefit by getting more capable machines for less money, executives from both companies said last week.

"Making our BIOS, both present and future, available is another important step in lowering costs [of systems] to end-users, since this is a quicker way of ensuring compatibility," said Humberto Cordero, IBM personal systems group director of OEM and technology licensing.

But some observers do not expect IBM's clone competitors to knock doors down to get the code. Only a few hardware vendors have brought MCA clones to market, most with marginal success.

Still, IBM and Phoenix believe there will be a revived interest in MCA with the time and money barriers removed.

"Not having an IBM-endorsed BIOS [for MCA] has been one of the biggest inherent barriers," said George Adams, Phoenix's vice president of business development.

The companies have jointly developed a new version of IBM's BIOS that offers more flexibility for today's faster chip sets and better support for modular structures that can be rapidly deployed to new hardware platforms, Adams said.

IBM will deliver the first systems that use the SurePath BIOS by the end of the year, Cordero said.

Another part of the program is a suite of software programs that let OEMs test for compatibility with the SurePath PC standard. Both companies will evolve the SurePath PC specification to support other technologies, including EISA.

Crunch numbers without a spreadsheet.

COMING JUNE 28.

'The check is in the modem,' as Einstein pays the bills

BY JIM HAMMETT

ATLANTA — National Payment Corp., introduced here at Comdex last week, a communications and encryption module for users to make electronic payments.

The company also announced plans to provide a payroll tax deposit service covering all federal, state, and local taxing jurisdictions by the end of this year.

The module, called Einstein, will be available in June for DOS and Windows and can be seamlessly integrated into any existing accounting software application. It will not require users to exit the program to initiate electronic payment transactions, said Tim Tracey, National Payment Corp. president.

"The encryption routines in Einstein are designed to keep sensitive payment information confidential and safe from unauthorized access," Tracey said, adding that changes in the code can be made on the fly through NPC.

Users also will not have to worry about modem settings to send electronic payments, a problem that has proved time-consuming.

"Once installed, Einstein can find a

modem on any PC port, determine its speed and settings, and adjust the needed communication parameters automatically," Tracey said.

Einstein will be capable of sending more than one file at a time, saving costs on individual transaction calls. "Users can simultaneously transmit their direct deposit, electronic collection, and payroll tax information with a

few keystrokes," he said.

Einstein's two-way communications will provide users with an on-line confirmation of all information received when making electronic payments. Also, users can request that order forms for products or supplies be downloaded.

For electronic payments, the module will be backward compatible with its NPC-Pay for DOS and Windows file

formats.

A Macintosh version of Einstein is expected to ship later this year.

An NPC electronic developer kit is available and comes with an unlimited license for \$20 per operating platform. A Macintosh and Unix SDK is expected by year end.

National Payment Corp. is in Tampa, Fla., at (813) 222-0333.

QuickDraw fortifies Mac color artists with infinite tools

BY TOM QUINLAN

Developers will finally get their hands on a version of QuickDraw GX from Apple Computer Inc., as a beta developers' kit was released at Apple's WorldWide Developers Conference in San Jose, Calif., earlier this month.

Although an estimated 250 companies have been working with Apple to develop the beefed-up drawing module within the Macintosh OS, Apple is delivering the software to a wider audience.

QuickDraw GX puts a number of advanced drawing tools (such as Bezier curves), shapes (such as rectangles and circles), and typographic tools directly into the operating system.

Apple is also using QuickDraw GX to enhance its support for color graphics.

In all, more than 500 new routines dealing with graphics, color, and type have been added to the software module, Apple executives said.

Introduced more than a year ago, QuickDraw GX is designed to increase the basic functionality of all Macintosh programs, said David Nagel, Apple senior vice president of the Macintosh software architecture division.

Graphics software developers will no longer have to develop their own libraries of graphics primitives for more complex drawings, color support, and TrueType, and Adobe Type I rasterizers will also be directly supported within QuickDraw GX.

At the same time, Apple announced QuickTime for Windows 3.1 with support for Apple's Compact Video code, which enables users to play back QuickTime movies faster in larger windows.

A developers' version will be available this week, the company said.



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Ecco Professional PIM can group data to suit your needs

BY JIM HAMMETT

A proprietary database in Arabesque Software Inc.'s Ecco Professional personal information manager lets users organize, cross-reference, and categorize information in a variety of ways.

Ecco includes a phone book, calendar, and to-do list and gives users the ability to gather information from those features

and view the data in one place. (See First Look, page 98.)

A feature called Shooter lets users import information from other applications and bring it into one location to find relationships or associations among the information, the company said.

Pete Polash, Arabesque cofounder and president, said the added features in the PIM are designed to speed up the decision-making process.

Ecco includes a number of vertical market templates such as time management, legal, project management, sales, and research, Polash said.

Ecco includes a number of tools, including drag-and-drop folders, named filters, a customizable tool bar, auto-save, auto-backup, and full Object Linking and Embedding client support.

The application also offers support for leading electronic mail protocols, including Vendor Independent Messaging (VIM) and Messaging Applications Program Interface (MAPI), and can run on major network platforms, including Novell Inc.'s NetWare and Microsoft Corp.'s LAN Manager and Windows for Workgroups, so users can make outlines and folders available to other network users. The company is also developing a workgroup version of Ecco.

Available in June, Ecco will be offered through resellers for a 90-day introductory price of \$99. Thereafter, the suggested retail price will be \$395. Arabesque, in Bellevue, Wash., can be reached at (206) 869-9600.

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TextBridge, a \$99 OCR package, can recognize any typeface on documents such as photocopies and faxes.

Xerox integrates OCR innovations into \$99 package

Xerox Imaging Systems Inc. last week introduced an optical character recognition (OCR) package for Windows that costs \$99, about one-fourth the cost of existing OCR programs.

TextBridge uses technology developed at the Xerox Palo Alto Research Center and includes innovations such as a lexer and automatic segmentation feature.

The lexer automatically identifies and recognizes certain known patterns, such as social security numbers and postal codes.

Automatic segmentation lets the program read the order of text on a complex page regardless of columns, images, or captions dispersed within the text.

The package includes a Windows Dynamic Data Exchange interface, enabling users to access TextBridge while working in other applications.

TextBridge also has a macro that lets a Microsoft Word user activate the program through the file menu without leaving Word and scan and recognize pages.

The software supports most scanners and imports TIFF files from most fax/modem software. It will automatically detect a skewed page and correct the orientation by up to 5 percent rotation, officials said.

TextBridge, available through Xerox Imaging Systems, will ship in June.

The Peabody, Mass.-based company can be reached at (800) 248-6550.

COMDEX

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Window Manager / Brian Livingston

Windows developers are getting the whole gang involved

More and more Windows applications are emulating Microsoft Corp.'s habit of including hidden screens that show the names of programmers and others who worked on the products. These displays — often quite colorful and ani-

mated — are called "credit screens," "gang screens," or "Easter eggs" (since you must hunt to find them).

I revealed in my April 6, 1992, column (the day Windows 3.1 shipped) how to raise Microsoft's credit screen. For those who missed it, you click Help About in the Program Manager, then hold down Ctrl and Shift while you double-click the

Windows logo in the upper left corner of the About box. You must go through this whole procedure *three times* before you see an animation of Bill Gates or some other Microsoft character pointing at a scrolling list of developers' names.

The new PC Tools for Windows, which shipped March 15, has an undocumented feature that is similar to this. From the

PC Tools Desktop application, click Help, then About Desktop. Hold down Ctrl-Shift and double-click both mouse buttons on the Desktop icon at the same time. It sometimes took me three or four tries to get my mouse fingers coordinated well enough to make this work. But you only need to do the procedure once to see a window full of fireworks and the names of developers and support staff.

Central Point Software Inc., the publisher of PC Tools, has added a few nice wrinkles to the gang screen scene. Double-clicking the screen makes it jump to the next scrolling section (to more quickly show your name to an impatient mom). Clicking once makes the fireworks seem to emerge from the area of the screen you clicked. And clicking once with the right mouse button makes the fireworks appear to emerge at random from the whole window. Thanks to Dennis Frazier of Pasadena, Md., for his help with this trick. (For information on PC Tools for Windows, call [503] 690-8088.)

CorelDraw 3.0's credits screen is also accessed through the Help About box. Hold down Ctrl-Shift while you double-click the balloon logo. In the next window that appears, hold down your left mouse button, and a hot-air balloon rises with a banner listing the gang.

But the new CorelDraw 4.0, which hasn't even been released yet, will have the best Easter egg of all. In the Help About box, you don't have to hold down Ctrl-Shift anymore — just double-click the balloon. Hold down your left mouse button to make the hot-air balloon rise. Then click your right mouse button a few times and *Flying Elvises* come parachuting out of the sky. This is reminiscent of Corel Systems Corp. hiring actual skydiving Elvis impersonators for fall Comdex.

Because these screens are so much fun to watch, I wish developers would simply put a Help Credits item on their menus. The names are always abbreviated (to keep pesky headhunters off the phones), so letting us see them couldn't hurt.

UPDATES. I wrote on May 17 that Microsoft's CD-ROM Extensions, MSCDEX, EXE, could not be removed from memory once loaded.

I have since learned that Online Computer Systems Inc. sells CD-ROM server software called OptiNet, with a client module that can load and unload MSCDEX at will. Pricing varies by network, with a 100-user license priced at \$1,495, including all server, client, and MSCDEX licenses. Contact Online at (800) 922-9204 or (301) 428-3700.

I wrote on May 24 about a product that allows you to switch between a mouse and a pen interface without restarting Windows. If you already use a Wacom or CalComp tablet, you can get a driver in Fractal Design Corp.'s Painter application that does the same thing (\$299 from Alexander & Lord, [800] 647-7443). Wacom owners can get this driver free by calling (206) 750-8882 or by dialing (408) 982-2737 with your modem and downloading WACOM.ZIP.

Brian Livingston's new book is *Windows Gizmos* (IDG Books). Send tips to: Computer Serve 70053, 2035; MCI 420-0583; Internet 420-0583@mcimail.com; or fax (206) 282-1248.

IN FOCUS

ROBERT X. CRINGELY Columnist, "Notes From the Field"

Profile: Former war correspondent, Stanford University professor, hack writer. Sex symbol. Fired by several pioneering PC companies. Author of *Accidental Empires: How the Boys of Silicon Valley Make Their Millions, Battle Foreign Competition, and Still Can't Get a Date*. Speaks widely and semicoherently on the state of the PC industry. Writes *InfoWorld's* "Notes From the Field," a column of industry secrets and philosophy.

Cringely on computer gossip: "I don't like that word, because a lot of gossip is wrong. I prefer to talk about 'little-known facts.' And those facts, however sketchy, can be very important to an IS manager ready to buy 5,000 copies of a new application, or 5,000 new PCs. Does the stuff really work? Will the price drop next week? Is a better, faster product going to ship the week after next? Is the vendor about to go out of business? Jobs are at stake here, and *InfoWorld's* readers need all the information they can get before making their buying decisions."

On engineers: "Techies are my best sources. That's because companies lie, bosses lie, but engineers are generally incapable of lying. Most engineers won't even tolerate it when others in their companies lie, which is why I get so many calls from embarrassed or enraged techies undertaking what they view as damage control but their companies probably see as sabotage. I love engineers."

On writing a weekly column: "This business is moving so quickly that readers need a weekly newspaper. The column they read on Monday left my fingers on Friday morning. Monthly or bimonthly publications are set in stone weeks before they appear. DOS 6.0 could go through three betas in that time. If your career depends on this stuff, then you need the latest information. And of course, I need the money."

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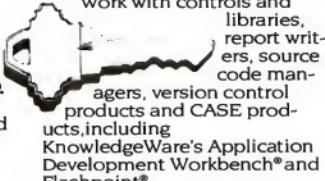
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NEWS / HARDWARE

PIPELINE PRICE CUTS

Apple pares prices on two of its printers

Apple Computer Inc. has lowered the list prices of two of its printers by nearly 33 percent. Prices for the Apple Color Printer dropped by \$690 to \$1,659. The ink-jet printer offers 360-dot-per-inch output and prints on paper as large as 11 inches by 17 inches. The Personal LaserWriter NTR, Apple's four-page-per-minute laser printer previously priced at \$1,649, will now retail for \$1,179. (800) 767-2775.

Tandberg Data Inc. has cut prices for its quarter-inch tape and Panther series of tape backup devices by as much as 48 percent. A 1.2-gigabyte Panther drive designed for use in Unix environments is now priced at \$1,425. (805) 495-8384.

VidTech Microsystems has cut prices on its FastMax and Graph-Max graphics accelerator boards by between \$30 and \$100. The XGA-compatible GraphMax boards are now priced from \$349 to \$499. The VL bus-based FastMax boards list for \$199 to \$219. (800) 752-8033.

BUNDLES

IBM ThinkPad Pen 0S gets Windows Pen OS

The IBM ThinkPad 710 tablets and future IBM tablets will offer Windows for Pen Computing in addition to other pen operating environments, thanks to an agreement between the IBM Personal Computer Co. and Microsoft Corp. Other operating systems offered on ThinkPad tablets are Go Corp.'s PenPoint, Gid Systems Corp.'s PenRight, and Communication Intelligence Corp.'s PenDOS.

SHIPPING

Dauphin's ultralight portable shelf

Dauphin Technology Inc. has begun shipping its hand-held DTR-1 computer. The 2½-pound computer uses Windows for Pen Computing and will run standard Windows applications. IBM manufacturers the computer for the Lombard, Ill., company. The \$2,495 base unit includes a fax/modem, a Cxyn Corp. 486SLC processor, 4MB of RAM, and a 20MB hard drive. Options include an additional 2MB of RAM, a 40MB hard drive, and an external 85MB removable cartridge drive. (708) 971-3400.

Continued on page 34

IBM ValuePoints get multimedia additions

BY CATE CORCORAN

ATLANTA — Multimedia is moving into the mainstream at IBM.

The company has added double-speed CD-ROM drives and 16-bit sound cards to its desktop PC ValuePoint systems, making them compliant with the MPC Level 2 specification announced last week. (See related story, Page 35.)

The new Multimedia for PS/2 ValuePoint (MPV) series brings sound and CD-ROM for the first time to IBM's mass-market PCs, which run DOS and Windows. IBM expects the machines to catch on with business-run training and kiosk applications. The double-speed CD-ROM drive will let users display large 16-bit color images, said Hugh Dyer, IBM multimedia brand manager.

Since 1991, IBM has offered multimedia functions on its PS/2s, but these were available only with OS/2 software and Micro Channel buses.

Now users can buy multimedia machines for \$450 extra in-

stead of the \$1,000 extra that multimedia PS/2 cost, IBM officials said.

The MVP systems come in three versions for the business and home markets.

The business systems, called Office, come with displays, speakers, or microphones, so users can customize according to their applications, Dyer said.

A basic Office system with 16MB of RAM, a 25-MHz 486SX processor, and a 120MB hard drive is priced at \$1,800.

At the high end, an Office system with a 33MHz-486DX2 and a 340MB hard drive is priced at \$3,100.

IBM also said it will ship voice-command software called Voice Type Control for Windows, which is expected to be priced at less than \$100 at the retail level.

Other announcements made by IBM last week at spring Comdex include a pin-pointed fax/modem and other software, as well as preloaded server software for the PS/2 Model 9585. OS/2 servers come with OS/2 LAN Server 3.0 Entry; DOS 5.02 servers come with NetWare from IBM Version 3.11 for Token Ring and Ethernet.

The same software for ValuePoint servers will ship next month, the company said. IBM headquarters are in Armonk, N.Y., at (800) 426-2968. The IBM Multimedia Information Center can be reached at (800) 426-9402.

— Ed Scannell contributed to this story.



IBM is bringing devices such as sound boards and CD-ROMs to its ValuePoint line.

A glossary of PCMCIA terms

Type I

The thinnest PC card at 3.3mm thick. It is used for memory enhancements, including RAM, Flash, SRAM, and EEPROM.

Type II

A 5mm thick card. This size card is usually used for modems, LAN adapters, and host communication cards. It is the most common slot on shipping notebooks.

Type III

A 10.5mm card. These cards are used for devices that need more space, including disk drives, and wireless communication devices.

Card Services

The software layer that coordinates access to PC cards, the sockets themselves, and the system resources.

Socket Services

The software layer directly above the hardware that provides a standardized interface to manipulate the cards, sockets, and adapters.

Versions

Version 1.0 was released September 1990 with only hardware specifications.

Version 2.0, issued the following September, added software allowing for input and output cards (modems, disk drives, etc.). Release 2.01 contains typographical corrections and no new technical specifications.

SOURCE:PCMCIA

PCMCIA spec debated

Group doesn't want 16mm cards

BY YVONNE LEE

The Personal Computer Memory Card International Association is debating with notebook manufacturers about whether to develop a new specification for thicker notebook peripherals.

The group wants to discourage memory card makers from creating cards thicker than the current 10/mm Type III specification, while allowing system manufacturers to use larger slots, said Tony Wutka of IBM, chairman of the PCMCIA technical committee.

"Card manufacturers would take the easy way out and avoid miniaturization," Wutka said. Cards larger than even Type II will not fit in most notebooks, he said.

Toshiba America Information Systems Inc. calls the 16mm slot on its T4600 notebook "Type IV," but association members say the group is unlikely to adopt a Type IV specification.

"They're talking about it, but they have definitely not started work on it," said Neilson Chan, director of marketing at Sunkist Corp. and a PCMCIA executive member.

The Japanese Electronic Industry Development Association standard on which PCMCIA is based does include a 16mm specification, Wutka said. Although peripheral makers are developing to the larger slot, only Toshiba has announced a machine with a 16mm opening.

Customers who buy computers with larger-than-standard slots will still be able to use standard cards.

"We already have options coming for that slot," said Ron Smith, Toshiba senior product manager. The company will release in July a modem it codeveloped with IBM that has two built-in RJ-11 jacks, he said.

Disk drive manufacturers may also use the larger slots to create multilayer hard drives.

Epson rolls out graphics PCs and enters the notebook market

BY SHAWN WILLETT

ATLANTA — Epson America Inc. showcased PCs tailored for graphics applications and two notebook computers here at spring Comdex last week.

The Progression 4 PC includes a graphics chip set on the motherboard to boost performance.

"With the Wingine [chip set], the system doesn't have to go

through a video controller to access the VRAM [video RAM], so it skips a step," said an Epson representative.

The Progression 4's virtual cache also boosts performance above local bus implementations, Epson said.

The PC uses Intel Corp.'s 33MHz 486SX, 50MHz 486DX, or 486DX/2/66 chip. Epson's cat-

alog will sell the product under the name Endeavor 4.

Epson also entered the notebook market with the Action-

Note 4SLC/25, a full-sized model, and the Action-Note 4000, a sub-notebook.

The ActionNote 4SLC/25 weighs 5½ pounds and uses the 486SLC chip that runs at 25 MHz.

The ActionNote 4000, shipping in July, weighs 3.8 pounds and has two PCMCIA slots.

The company also announced plans to ship a PC bundled with Next Computer Inc.'s NextStep.

The Progression 4 and Endeavor 4 start at \$1,339, and the ActionNote 4000 starts at \$1,400. Pricing has not been set on the ActionNote 4000.

Epson, in Torrance, Calif., can be reached at (800) 289-3776.

HP Disk Array provides secure storage for servers

BY TOM QUINNAN

A new EISA-based disk array from Hewlett-Packard Co. is designed to offer users a moderately priced storage solution.

The HP Disk Array can accommodate as many as five SCSI drives of 510MB or 1-gigabyte capacities.

Designed to be used in HP's recently announced NetServer line, whose internal capacity is limited to five drives, HP will also be selling the product as an external add-on for servers from other hardware manufacturers.

Although HP is providing an EISA-based controller for the array, the drives themselves are Fast SCSI-2 devices that can support data transfer rates of 10MB per second.

The EISA controller was used to reduce the cost of the system,

HP officials said, but the array cannot be used as a standard SCSI device.

The HP Disk Array supports RAID Levels 0, 1, 5, and 6.

Level 1 is disk mirroring, and Level 5 supports features such as disk striping.

Level 6 is a nonstandard RAID definition that lets the system automatically switch to a "hot spare" module if one of the drives starts to go bad.

Prices for the system, which HP expects will meet or beat those of its competitors, range from \$8,849 for a four-disk system with a RAID Level 5 storage capacity of 1 gigabyte to \$14,899 for a five-disk array with a Level 5 storage capacity of 4 gigabytes.

The system will start shipping June 1 and will be sold through computer specialty stores.

Striking 486 PC preserves desk space, users' eyes

BY YVONNE LEE

ATLANTA — The APF4000 desktop computer line beckons the Sharper Image buyer, combining unusual looks with compact size and a no-screen strain screen.

APF's futuristic-looking black computer has a 10.2-inch active matrix color display and a 9-by-10-inch footprint.

It is being marketed to businesses where space is at a premium. But most of all, APF is selling the computer's look.



Its unique look is the main selling point for the \$5,995 APF4000.

"You pay \$1,000 more for a mint coat vs. a cloth coat," said Sue Priester, a company representative.

Priester also pointed out that telephones were once simple utilitarian tools but now come in variations including Mickey Mouse.

On a more utilitarian level, the computer's flicker-free LCD screen does not emit low-frequency radiation or produce the eyestrain that standard monitors do. It displays 64,000 colors and is larger than the flat-panel screens used in most notebooks.

The \$5,995 APF4000 uses a 66-MHz 486DX2 processor and has a 170MB hard drive, floppy drive, a PCMCIA Type II slot, and 4MB of RAM expandable to 32MB.

The \$6,590 APF4300 includes all of the 4000's features, plus a PCMCIA Ethernet or Token Ring adapter. The company also sells the enclosure and screen alone for \$4,495. All products are shipping now.

APF, in Greenville, S.C., can be reached at (803) 244-4416.

Star shows dry ink-jet color lowers price, raises quality of low-end color printing

BY KELLEY DAMORE

Star Micronics America Inc. last week brought a color printing technology to the market that may whittle away at the dominance of Hewlett-Packard Co. and Canon U.S.A. Inc. in the low-end color printing arena.

The \$599 SJ-144, which prints at 382 characters per second and at a resolution of 360 dots per inch, is based on a heat fusion technology that fuses a polyester substance onto the paper.

Because the ink is not absorbed into the paper, making it a dry process, the printer offers more vibrant output, said analysts and company officials.

In a wet process, such as ink-jet, ink is absorbed into the paper. This causes problems such as smearing and feathering, while the text and graphic edges are ragged because the wet ink has soaked into the paper's fibers.

"When the ink absorbs into the paper, it gives it a flat look," said Rob Auster, vice president of electronic printing for BIS Strategic Decisions, a market research firm based in Norwell, Mass.

Analysis said that the vibrancy of the color was as good as color thermal output.

"It has great quality and great color," Auster said. "At \$500,



Using a technology known as heat fusion and polyester ink, the \$599 SJ-144 could challenge low-cost ink-jet printers.

this printer is going to be very influential."

The printer comes with eight bit-mapped fonts and 15 scalable TrueType fonts. Its paper handling features include an automatic paper tray with 30-sheet capacity.

The device can print a variety of paper types, including transparencies and envelopes.

The printer supports Epson LO-860, NEC 24-wire graphic commands, and the IBM ProPrinter X24E emulations.

Star Micronics has incorporated its proprietary Compressed

Data Mode, which accelerates the transfer of information from the user's PC when printing TrueType fonts and graphics with Windows 3.1 applications.

The printer also offers a zoom mode that can reduce the size of any text or graphic.

Star also provides a two-page mode that lets the user print two pages of data on a single page.

The color printer will be available in July through dealers and distributors.

Star Micronics, based in New York, can be reached at (212) 986-6770.

Matrox rolls out 64-bit graphics card

BY CATE CORCORAN

ATLANTA — Sixty-four-bit graphics boards with optional laser-printing acceleration, video encoding and Video for Windows enhancement are now shipping from Matrox Electronic Systems Ltd.

The boards range in price from \$599 to \$1,499.

The MGA Ultima supports as much as 2MB of video RAM (VRAM) and offers resolutions as high as 1,600 by 1,200 with 256 colors. It also supports 16.7 million colors at a resolution of 800 by 600.

The MGA Impression comes

with 3MB of VRAM and supports resolutions of 1,600 by 1,200 pixels with 32,768 colors and 1,024 by 768 pixels with 16.7 million colors.

If users add 2MB of dynamic RAM to the board, it will support three-dimensional graphics, Gouraud shading, and z-buffering at resolutions ranging from 800 by 600 to 1,152 by 882.

Both boards offer refresh rates as high as 80 hertz.

They are VGA compatible and support the AT, Micro Channel, and VESA Local Bus standards. In addition to work-

ing with Windows 3.1 and OS/2 Presentation Manager, the boards will support Windows NT when that product ships.

Other features include a hot-key-driven pan and zoom, a 1,600-by-1,200 virtual desktop, and dithering for high color quality in all modes, the company said.

Options include the Marvel video controller, which blends video with MGA graphics and displays the result on a multi-sync monitor.

MGA graphics boards come with a connector for a LaserPro acceleration kit, which accelerates printing by as much as 600 percent and increases print quality by as much as 200 percent, according to Matrox.

In the third quarter, Matrox will ship a VideoPro encoder, which will let users send graphics and video to a VCR.

Other third-quarter releases include versions of the MGA cards for Intel's PCI local bus and the EISA bus.

Matrox is located in Dorval, Quebec, Canada, and can be reached at (514) 685-2630.

Accelerator card offers 76-hertz video refresh at entry-level price

ATLANTA — ATI Technologies Inc. has added an entry-level card to its line of Windows accelerators.

The VGA Wonder GT will ship next month for a list price of \$199. The card will offer resolutions as high as 1,024 by 768 with 256 colors and a refresh

rate of 76 hertz.

It comes with 1MB of video RAM and accelerates Windows consistently in all supported resolutions and refresh rates, according to the company.

Like all Windows accelerator cards, the VGA Wonder GT

speeds up some graphics operations by offloading them from the system CPU.

The VGA Wonder GT features a built-in mouse port and can be installed and configured in software, the company said.

The card is register-level com-

patible with IBM's 8514/A graphics chip so users are not forced to run in slow VGA mode if they don't have extended drivers, according to ATI.

ATI is located in Scarborough, Ontario, Canada and can be reached at (416) 756-0718.

— Cate Corcoran

LOTUS cc:MAIL

Awards (1992-1993)

- ComputerWorld I/S Brand Preference Winner, February 1992
- Windows Magazine WinAward, February 1992
- LAN Times Reader's Choice, March 1992, January 1993
- InfoWorld Product of the Year, March 1992
- BYTE Magazine Reader's Choice, June 1992
- BYTE Magazine Award for Cross-platform E-Mail, March 1993
- Network Computing's Certified Interoperable Application Award, December 1992
- Network World's Enterprise Technology Award, December 1992
- Software Digest's Highest Overall Evaluation, 8.7 Rating, 1992
- MacUser Editors' Choice Award, 1992
- MacWEEK 1992 Editors' Choice Diamond Award, December 1992
- UNIX World's Best Product of the Year for 1992, January 1993

MICROSOFT MAIL

Awards (1992-1993)

- PC Magazine Editor's Choice Award October 27, 1992

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NEC readies 40/80-MHz chip, kits to design systems for NT

BY TOM QUINLAN

NEC Technologies Inc. has increased its support for the R4000 line of 64-bit processors originally developed by MIPS Technologies Inc.

The two companies have jointly designed a low-power R4200 processor that features power management techniques for use in portable, while maintaining the processor's 64-bit architecture.

The first chip in the low-power family will be a clock-doubling processor that operates at 80 MHz internally while interfacing with the computer at 40 MHz.

The chip is designed to run at just 1/4 watts and is capable of automatically operating at levels as low as 25 percent of its normal operating frequency during periods of low activity.

NEC will be responsible for manufacturing the processor, which was developed jointly by NEC and MIPS.

Samples of the chip will be available by the end of the year, the companies said.

NEC has also developed manufacturing kits that include its chip set to help manufacturers design MIPS-based systems for running Microsoft Corp.'s Windows NT.

Dubbed the ARC100 and ARC150, the Advanced RISC Computing-inspired design consists of two MCT-DP data path controllers, one MCT-ADR address path, and a system control logic chip.

A MCT-ADR chip also includes the system's memory controller, bus interface, and video controller.

Together, the three chips will be sold for less than \$100, NEC said, when purchased in quantities of 10,000. Those chips are shipping now.

The design kits are expected to ship in July and will carry a price of \$5,000.

NEC will also develop and market products that conform to Acer America Inc.'s PICA chip set, which is also being used as a design point for desktop MIPS-based systems designed to run the NT operating system.

Pipeline from page 29

SHIPPING

APS offers hard drive option for Apple's LaserWriter Pro

Hard drives for Apple's LaserWriter Pro 630 are now available from APS Technologies. The 2½-inch drives use the SCSI controller that is included with the printer and range in capacity from 80MB to 160MB. Prices will vary between \$349 and \$549. APS is also offering a \$69 bracket kit, the APS LW PK-Kit, for users who have upgraded their PowerBook 2½-inch drives and want to use the original drives in the LaserWriter Pro 630. (800) 235-2753.

A 699MB, 3½-inch hard drive from **Micropolis Corp.** offers a data transfer rate of as fast as 10Mb per second. The Fast SCSI-2 Model 2108 has a list price of \$1,995. (818) 709-3300.

Bitstream Inc. of Cambridge, Mass., recently debuted a font collection for the Hewlett-Packard Co. LaserJet 4L. Called My First Font Pack for the HP LaserJet 4L Printer, the package includes 10 scalable Bitstream text and headline typefaces. Priced at \$12.95, the package is available immediately. (617) 497-6222.

ANNOUNCED

Apple's "Big Brother" ad makes Russian comeback

For those users who might have missed the one and only American presentation of Apple Computer Inc.'s "1984" commercial that introduced the Macintosh, there's still hope. Apple is dusting off the Big-Brother-themed commercial, rewriting the voice-over, and presenting it to a new audience that can probably identify with: Russians.

The PowerPC chip continues to gain overseas converts as three more European companies have committed to supporting the chip. Norway's **Tandberg Data Systems** will use the PowerPC in its next gen-

eration of desktop systems, while Germany-based **Chorus Systems** and **MacroTek GmbH** will develop products that support the processor.

Microplex Systems Ltd. of Vancouver, British Columbia, Canada recently introduced a new version of its print server line. The M200 and M201 models can support IPX/SPX and TCP/IP platforms. The printer servers feature SNMP management, allowing a network administrator to remotely monitor printer performance. Priced at \$795, the device will ship in July. (800) 665-7798.

Diamond Computer Systems Inc. has announced that it will ship a Peripheral Component Interface local bus version of its Viper Windows accelerator board in the third quarter. The Viper PCI, which is based on Weitek Corp.'s Power9000 chip, is designed to work with the Pentium processor and will support resolutions of 1,280 by 1,024 with 256 colors. The card will list for \$649. (408) 736-2000.

Canon Computer Systems Inc. announced this week a bubble-jet printer that can print on 11-by-17-inch paper. The BJ-230 prints at 360-dot-per-inch resolution at speeds of 248 characters per second in high-speed mode. The \$549 printer offers seven resident fonts. (800) 848-4123.

FINANCIALS

Dell is selling more, but its profits dropped sharply

Revenues for Dell Computer Corp.'s first quarter of fiscal 1994 grew by 89 percent compared to the year-earlier quarter, but that performance was eclipsed by an equally large drop in profits. The company earned only \$10.2 million for the quarter, compared to a year-earlier profit of \$19.8 million. Although the hardware business has been engaged in a fierce price war for the past two years, Dell attributed its low earnings to its poor performance in the notebook market. Delayed and canceled notebook projects cost Dell \$20 million in pretax income.

Media Vision rolls out MPC 2 upgrade kits

BY CATE CORCORAN

Following the announcement of the MPC Level 2 specification, Media Vision Inc. began shipping MPC Level 2 upgrade kits last week.

The Pro 16 Multimedia System and the Fusion Double CD-Ultra upgrade kits include Media Vision's Pro AudioSpectrum 16 sound card and double-speed CD-ROM drives from NEC Technologies Inc.

The Pro 16 kit lists for \$1,199 and comes with a faster CD-ROM drive and more software than the Fusion Double kit, which lists for \$799.

Both drives send data across the bus at 300KB per second, but the Pro 16 drive has a data access rate of 250 milliseconds, vs. the 350-millisecond rate of the drive provided with the Fusion Double kit.

The Pro 16 kit includes MIDI sequencing software, a waveform editor, a sound mixer, voice-recognition software, and software that enables the CD-ROM drive to play audio CDs.

The kit also includes reference materials and games.

The Fusion Double kit comes with Compton's Interactive Encyclopedia and three games.

Last week, Media Vision acquired a three-dimensional graphics company, Pellicid Inc., which was started by former employees of Silicon Graphics Inc., a company known for its 3-D graphics workstations.

The company will become the Visual Technology Group within Media Vision and will work on bringing 3-D animation and high-resolution (1,024-by-768) 24-bit graphics to a broader PC market, said Satish Gupta, Media Vision vice president of strategic marketing and development.

The group will develop chips and boards. Its first products, add-in boards, will ship early this summer, Gupta said.

At some point the group will combine Pellicid's graphics with Media Vision's motion video on one board, Gupta said.

Media Vision will continue to support Pellicid's installed base, Gupta said.

Media Vision, in Fremont, Calif., can be reached at (800) 348-7116.

LaserMaster introduces large-format color printer

BY KELLEY DAMORE

For users interested in printing large-format documents, LaserMaster Technologies Inc. may have an affordable solution.

The company recently unveiled a digital color printer that can print on paper 36 inches

wide. It is PostScript Level 2 compatible using Pipeline Associates Inc.'s PowerPage interpreter.

HP-GL/2 is also included and the printer can sense the appropriate page description language. Color matching and image enhancement technology are also included.

Available for both the Macintosh and PC, the DisplayMaker includes Ethernet (EtherTalk and TCP/IP), LocalTalk, and parallel and serial ports. LaserMaster's HotPorts technology switches between ports to print all jobs in the order received.

The Color Server includes 48MB of RAM, upgradable to 256MB. A proprietary 66-MHz 32-bit processor, floating-point unit, and a 264KB fast cache are included.

The printer has two resolution modes: 300 dots per inch (dpi) and 150 dpi for proofing. It ships with 235 Type I typefaces on a 220MB internal hard disk.

LaserMaster, of Eden Prairie, Minn., is at (800) 688-8342.



The DisplayMaker lets users print on oversized paper at a relatively modest price.

wide and 110 inches long.

LaserMaster's DisplayMaker Digital Color Printer should make these capabilities more affordable, as it will ship in June with a list price of \$17,995.

To date, printers in this market from companies such as Iris Graphics Inc. have cost between \$85,000 and \$120,000.

The DisplayMaster features a four-color ink-jet engine and a Color Server Raster Image Pro-

Multimedia PC spec refined

MPC Level 2 recommends 486, faster CD-ROM

BY TOM QUINLAN

An upgraded multimedia specification has been authorized by the Multimedia PC Marketing Council that calls for a 486 processor and a double-speed CD-ROM drive.

At the same time, the MPC specification, which designates that the system meets a base level of multimedia functionality, will now be a stamp of certification as well. MPC members will have to submit their products to a testing process to make sure they comply with the MPC specifications.

The MPC Level 2 specification, although backward compatible with the original 386-based specification, recognizes that many multimedia applications require a more robust environment, said Glen Oehsener, general manager for the marketing council, which holds rights to the specification.

The practical level of performance that an MPC Level 2 system is designed to support is the capability to show digitized video in a 320-by-240 window at 15 frames per second.

Unlike the original specification, MPC Level 2 also recommends the minimum bandwidth manufacturers should provide.

The MPC Level 2 specification stops just short of mandat-

MPC Level 2 mandates higher performance

Reacting to faster processors, better peripherals, and the need for more power, the Multimedia PC Marketing Council has developed an extended specification for the next generation of multimedia PCs.

The requirements include:

- 25-MHz 486SX, or compatible
- 4MB of RAM
- 160MB hard drive
- Double-speed, multi-session CD-ROM drive
- 16-bit audio
- 16-bit VGA graphics
- Local bus (not specifically required, but overall system design virtually mandates it).

ing local bus capabilities as well. However, the suggestions for MPC Level 2 system design virtually mandate it.

"We didn't want to be in the position of supporting one particular technology over another," Oehsener said. "That's why we didn't require something like [Peripheral Component Interface] or VESA Local Bus."

In addition to the more powerful processor, the MPC Level 2 specification calls for a double-speed CD-ROM drive capable of transmitting data at 300KB per second, or fast enough to support video.

Other additions to the Level 2

specification include 16-bit sound, a 160MB hard drive, 4MB of RAM, and a 16-bit VGA graphics board capable of supporting as many as 65,000 colors.

According to the council, more than 34 hardware vendors have licensed the MPC specification, including Tandy Corp., Zenith Data Systems, NEC Technologies Inc., and NCR Corp.

The cost of licensing the MPC sticker is \$35,000 for upgrade kit developers and \$70,000 for systems manufacturers.

Alternatively, systems manufacturers can opt to pay \$1 for each MPC system they build.

Dell adds local bus to entry-level systems

BY STEVE POLLINI

Low-priced systems from Dell Computer Corp. were equipped with local bus graphics last week at no extra cost.

Dell Dimensions systems, now shipping, have local bus graphics integrated on the motherboard. This boosts processor performance by as much as 67 percent and the graphics speed of systems by as much as 122 percent, said Roger Hardin,

Dell's group brand manager.

The local bus implementation is the same as in Dell's more powerful Performance series, but the company reduced the manufacturing cost so it would not add to the Dimensions' price, Hardin said.

The new Dimensions, ranging from a 25-MHz 486SX system to a 66-MHz 486DX2, start at about \$1,400. The cheapest model is a 4/25 with a 170MB hard disk, 4MB of RAM, two

floppy drives and a 1,024-by-768 color monitor.

The systems are available in small footprint, midsize, and floor-standing models.

Dell also extended its ReadyWare program to include the Dimension line. ReadyWare, where applications are pre-loaded, allows customers to select from 100 software packages.

Dell is based in Austin, Texas, and can be reached at (800) 274-3355.

Product Spotlight

Miniature hard drive works with any computer

The Pocket Hard Disk from Synergy Resource U.S.A. Inc. provides a low-power way to store extra data. The drive, which is about the size of two decks of cards, snaps onto the parallel port of any computer. The drive has a pass-through socket, allowing users to connect both the drive and a printer to the same parallel port. It measures 5.8 inches by 3.0 inches by 1.1 inches and weighs just over 11 ounces.

The Pocket Hard Disk draws power from the computer via a keyboard adapter. Users can also purchase a separate rechargeable battery or AC adapter. Prices range from \$380 for a 40MB drive to \$950 for a 200MB drive. The drives are available now. Synergy Resource U.S.A. can be reached at (407) 788-6708.



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raises the standard. XJACK™ (extendable jack), part of the new PCMCIA data/fax modems from Megahertz.



In the PCMCIA slot, XJACK pops out for use and back in for travel.

XJACK™ is a simple and practical connector that pops out with the touch of a finger and allows you to hook directly to a phone jack without bulky cables.

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Time and Place

Welcome to Time and Place/2, the leading edge LAN time management solution from IBM that's



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Time and Place/2 helps organize everything. From prioritized "to do" lists to deadline "alarms" to plans of people and their assigned tasks. It does routine scheduling, posts updates, and displays designated users' personal calendars with daily, weekly and monthly

machines. So it's ideal for client/server environments. What's more, it also works with DOS workstations under Microsoft Windows. And it lets you communicate through E-mail over other networks.

On-line help is always available. And it comes with IBM's world class service and support. Don't lose another nanosecond. Call now to order Time and Place/2 or to get free information including a demo diskette. Dial 1 800 IBM-Call, ext. S41. In Canada, to order or for more information, call 1 800 465-1234, ext. 379.



Time and Place/2, another software application from IBM Programming Systems.

Time.



Tech Talk / Steve Gibson

Avoid DOS 6.0 data loss with SmartPrompt or other TSRs

I know that I've hit a nail on the head when for 10 days half my time is spent just keeping up with all of the mail generated by a column. My column of May 17 (page 34) broke all electronic mail records. In that column, I disclosed my suspicion that MS-DOS 6.0's default installation of its SmartDrive hard disk cache with deferred writing (and without any provision for delaying the return of the DOS prompt until after the cache has been completely flushed) might be responsible for MS-DOS 6.0 data loss.

That column also presented SmartPrompt, my little 336-byte TSR that makes the DOS prompt "safe" once again. Because our eight-line BBS was swamped with downloads, many people wrote to ask where they could find SmartPrompt on-line. For the record, SmartPrompt is located on CompuServe in Data Library 1 of the IBMHW forum under the name SMARTP.COM. Internet users looking for anonymous FTP downloading can find SmartPrompt on SMTEL20.oak.oakland.edu, or any of their mirrors, under the name SMARTPMT.ZIP, probably in the msdos.dir\util directory.

Amid the flurry of E-mail, I was amazed to learn how many people were already very aware of this problem with SmartDrive 4.0 and 4.1. Because the problem has existed since the release of Windows 3.1, which installed SmartDrive 4.0 with the same default configuration, many people had already worked around the problems inherent in a write-deferring cache that doesn't clean itself up before returning to DOS. Many people have created clever batch files that run DOS applications, then execute the command SMARTDRV/C before terminating back to the DOS prompt. This command forces SmartDrive to flush any pending writes before returning to the user. One person wrote to say that he always instructs people to enter this command before they turn the computer off. (I hope they always remember!)

Still other readers had discovered that they could force a cache clean-up by triggering a reboot with the famous Ctrl-Alt-Del keyboard sequence. SmartDrive intercepts this hotkey action and flushes its cache before allowing the system to reboot. After a reboot was underway, these people would turn their computers off in (relative) safety. I was frankly amazed to see how many people had cooked up workaround solutions for this problem.

Although a tiny TSR like SmartPrompt is a much better solution to this problem, many readers have been so abused by poorly written TSRs in the past that they will go to any lengths whatsoever to avoid loading *anything* permanently in their system's memory.

I understand how they feel. But writing robust resident programs is no longer akin to black magic. Today it's pure cold science. If you'll give it a chance, I'm sure you'll find that SmartPrompt behaves itself quite well.

One of the reasons more people have

not been experiencing data loss under Windows is that Windows itself completely resets the SmartDrive disk cache as it is shutting down and returning to DOS. It signals its intention to do this by issuing an interrupt 2Fh with the processor's AX register containing a 1600h. Any interested device driver or TSR can intercept this message and plan for Win-

dows' pending exit. SmartDrive uses this message to completely reset and resize itself for non-Windows operation. In the process, all pending writes are completely flushed. If the system is turned off immediately upon exiting from Windows to DOS, no data will be lost.

In response to my statement that write caching was a beneficial technology that

is here to stay, I received a significant number of letters from people who felt that having a cache defer writes is a foolhardy and completely hazardous practice with very few benefits. Next week we will take a look inside the technology of write caching to see how it is possible to completely eliminate all the time required to write to the disk.

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NEWS / NETWORKING

Pipeline

ANNOUNCED

Backup software unbundled for Mac

Dantz Development Corp. will ship in June a stand-alone version of its Retrospect A/UX backup software for the Macintosh, previously only available bundled with Apple Computer Inc.'s Workgroup Server 95. It requires Version 3.0.1 of Apple's A/UX, also scheduled to ship in June. Upgrades from Retrospect 2.0 are priced at \$200. (800) 225-4880, Ext. 30.

Shiva Corp. announced Token Ring versions of its remote network communications servers, which come in four- and eight-unit ports. Lan Rover/T for NetWare provides as many as 100 dial-in lines supporting speeds of up to 64kbps per second and connecting directly to 4Mbps and 16Mbps backbone Token Ring networks. Shipping in June, the product is priced starting at \$2,799. (800) 458-3550.

SHIPPING

Sassafras enhances metering software

The enhanced 3.1 version of Sassafras Software Inc.'s Macintosh-based KeyServer license metering software, which now features an automatic backup service, adds support for remote users, TCP/IP over MacTCP, and new reporting modules. Pricing per client ranges between \$35 and \$70. (603) 643-3351.

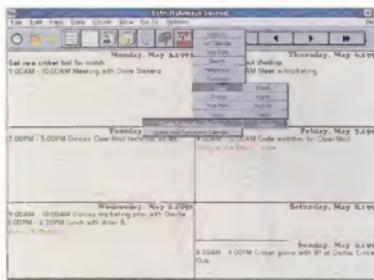
Technology Works Inc. is shipping GraceLAN Server Manager, an AppleShare server management, administration, and network monitoring system. It is priced at \$395, \$695, and \$995 for one-, five-, and 10-server packages, respectively. (800) 688-7466.

Novell Inc. is shipping its MacIPX Software Development Kit (SDK) for writing cross-platform Macintosh applications using NetWare's native IPX/SPX transport protocols instead of TCP/IP or AppleTalk. The SDK is priced at \$295. (800) 638-9273.

PRICE CUTS

NetWorth cuts pricing on its 10Base-T NICs

NetWorth Inc. has reduced pricing on its 16-bit 10Base-T network interface cards. A single card is now available for \$189. Users who purchase a five-pack bundle get an additional savings of \$20 per card. (800) 544-5255.



Raindrop's Epoch links and embeds documents and files directly into a group calendar.

Calendar employs OLE

To-do links enable workgroups

BY VANCE MCCARTHY

A Texas start-up is completing work on a calendaring package that will be among the first programs to deliver workgroup features to Microsoft Corp.'s Object Linking and Embedding (OLE) technology.

Raindrop Software Corp.'s Epoch 1.0 calendaring software uses OLE to allow users to link to-do items — including word processing documents, spreadsheets, and other computer-based files — to their calendars.

Epoch's support of Microsoft's Windows for Workgroups, Novell Inc.'s NetWare, and Artisoft Inc.'s LANtastic enables the user to authorize other network users to work on these files.

For updates, links through NetBIOS and IPX notify the original document that things have changed. Epoch also polls applications in progress, checking files every few minutes for updates.

To-do items are linked to the calendar through Epoch's WorkSlate, a type of clipboard

where users can place OLE icons that represent documents or files.

"With WorkSlate, I can have all my documents on the calendar on the day I need them," said John Jeffus, president of Epoch. "Once I've created the WorkSlate the first time, I don't have to go into any other programs."

A WorkLinks button gives the user the ability to work with others, as long as they have access to the data or application.

"Everybody has to have access to the hard disk the data is stored on," Jeffus said. "You need either a dedicated server or a hard disk that can be accessed by more than yourself."

Epoch has been designed to handle even large, complex projects. WorkSlate was tested holding more than 250 objects.

Epoch will be available this summer priced at \$129 for one user; a five-user pack is \$535; 10 users cost \$895; 100 users are \$4,995.

Raindrop, in Richardson, Texas, can be reached at (214) 234-2611.

Banyan Vines adopts Windows NT, more Unix

BY JAYNE WILSON

Banyan Systems Inc. joined the crowd of vendors lining up to support Windows NT by announcing at spring Comdex last week that it will integrate Microsoft's coming operating system into Vines enterprise networks.

"We will support NT desktops and NT as an application server," said Bob Martin, director of product marketing. "We are putting only the Vines communication services on the NT server. The services will allow any other desktop on the network to access the NT server."

But Banyan stopped short of promising an Enterprise Network Services (ENS) add-on module for NT servers, like the one now shipping for NetWare.

The NT client, expected this summer, will offer complete integration to the Vines network, intelligent messaging, security, and network and system management all linked together with StreetTalk III directory services.

The news comes on the heels of Banyan's promise to deliver Vines versions for major RISC/Unix platforms, the most recent being IBM's RS/6000 workstations running AIX. Vines for AIX/6000 is expected to ship early in the first quarter of 1994.

ENS will enhance the RS/6000's capability to work as a commercial server supporting large client/server enterprise networks of DOS, Windows, OS/2, Mac, and Unix clients.

"Now instead of buying two Intel servers, Vines users could move up to an RS/6000 or an HP and keep everything on one box," said Jackson Shaw, president of the Association of Banyan Users International.

With 320 Vines servers online, the Federal Deposit Insur-

ance Corp. is one of Banyan's largest customers. "This [IBM] announcement is important for us because we are just beginning to break into client/server and may begin migrating some processing down from our MVS mainframe," said Richard Campbell, senior computer analyst.

Banyan is also working with Sun Microsystems Inc. to bring Vines to Sparc workstations running Solaris early in 1994.

Vines versions for SCO Unix and Hewlett-Packard Co.'s HPUX are planned. Support for Digital Equipment Corp.'s

Vines timetable

Product:	Available:
Vines for DOS	Since 1983
Vines for SCO Unix	August 1991
Vines for Windows for Workgroups	April 1992
Vines for OS/2	October 1992
Vines NT Client	Summer 1993
Vines for HP-UX	End of 1993
Vines for Sparc/Solaris	Early 1994
Vines for AIX/6000	Early 1994

RISC platforms is also likely.

Vines' coming NT client will be available free to Vines subscription holders via Banyan's bulletin board service. Customers can obtain a subscription through resellers. The NT client will be bundled with the next versions of Vines and Vines for Unix products.

Banyan of Westboro, Mass., is at (800) 222-6926.

VisiNet lets NMS monitor more than just Novell NetWare

BY TORSTEN BUSSE

Starting this fall, users of Novell Inc.'s NetWare Management System (NMS) will be able to monitor NetWare 2.x servers and non-NetWare operating systems using software from VisiSoft Inc.

The Windows-based version of the VisiNet network management software for NMS, slated for a third-quarter release, will enable NMS users to launch VisiNet from the NMS console

and monitor NetWare 2.x and 3.x servers, as well as other network operating systems such as Microsoft Corp.'s LAN Manager and IBM's LAN Server.

VisiNet will also support NetBIOS LANs, including Artisoft Inc.'s LANtastic, said Ken Davis, vice president of marketing for VisiSoft.

Novell's NMS monitors only

NetWare and 3.x servers. "We also allow for decentralized, distributed network management," Davis said.

Users will be able to install one copy of VisiNet in each department for local control of the network and can use VisiNet's scripting language to forward enterprise-wide alarms to the central NMS console.

VisiNet monitors NetWare using its native IPX protocol and keeps track of all SNMP-based devices. Its inventory database maintains 135 data fields. Trouble-ticketing capabilities and historical activity logs are also included.

Novell and VisiSoft have not decided whether the two products will be bundled or if VisiNet will be available as an add-on module, company sources said. As a result, pricing has not been finalized.

Currently the NetWare Services Manager, the centerpiece of NMS, is priced at \$4,995; VisiNet, for Windows 2.0 is priced at \$1,995.

VisiSoft, located in Norcross, Ga., can be reached at (800) 726-8003.

McData to route SNA over TCP/IP

Framing technique reduces the number of protocol conversions

BY VANCE McCARTHY

McData Corp. is working to provide network managers with more flexible options for linking host-based Systems Network Architecture (SNA) systems to distributed LANs.

The threefold effort focuses on routing SNA over TCP/IP links.

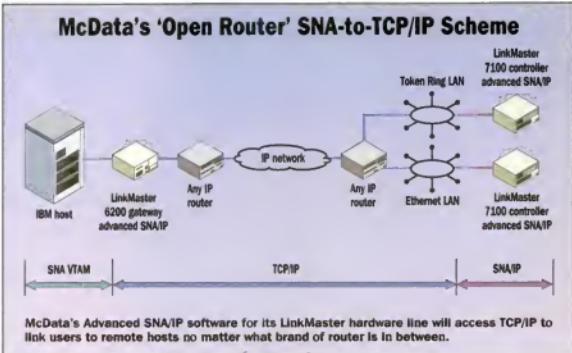
Chief among the technologies is a hardware/software solution that would allow managers to route SNA using any mix of routers. McData also plans to support vendor-driven plans, including IBM's proposed Data Link Switching (DLS) standard for routing SNA and router maker Cisco Systems Inc.'s remote source route bridging software.

"It's much easier to consolidate the SNA and LAN networks on the bridge/router backbone, because it will prove

cheaper and there is more available bandwidth for better performance," said Scott Palmquist, McData's director of product marketing. Bridge/router backbones can traditionally provide 56Kb throughput compared to the 9.6Kb provided by traditional SNA networks.

McData's Advanced SNA/IP open systems package, slated for shipment in September, is designed to reduce or eliminate the number of protocol conversions required in moving data between SNA and TCP/IP networks. A key reason is that, unlike most current solutions, the package frames SNA data before it reaches the TCP/IP network.

Advanced SNA/IP software will be available for McData's LinkMaster 7100 family of controllers, which will be able to frame SNA data within an IP



header. Once the SNA/IP data leaves the controller, it can be routed anywhere in the IP network through all leading routers.

Once the data is through the network, a McData LinkMaster 6200 network gateway receives the SNA/IP frame, removes the TCP/IP information, and passes the original SNA data to the mainframe via the SNA 3172 channel interface.

The McData LinkMaster

6200 mainframe-attached gateway also removes the IP header and passes it to the mainframe.

McData also said it would support IBM's DLS specification when it is accepted as an industry standard. The proposal is IBM's first effort at making SNA specifications directly available to other vendors, which would render SNA a more open and routable network architecture. DLS is currently being considered as a

standard by the Internet Engineering Task Force.

McData also has a technology agreement with Cisco whereby its LinkMaster 6200 network gateway will offload SNA translation from the Cisco router. McData's Cisco Support Feature software is expected to ship in September for \$5,995, McData officials said.

McData, based in Broomfield, Colo., can be reached at (303) 460-9200.

Arcserve can back up multiple drives

Upgrade to Version 5.0 adds Windows interface

BY TORSTEN BUSSE

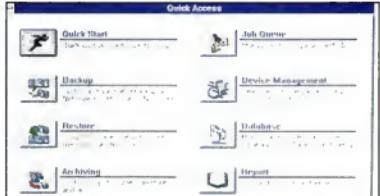
Cheyenne Software Inc. next month will ship an upgrade of its Arcserve backup and storage system for NetWare LANs that adds multiple server backup capabilities and for the first time sports a Windows interface.

Arcserve 5.0's parallel streaming functions enable it to control up to seven tape drives through one SCSI adapter. The product gives administrators the ability to perform backup operations for multiple workstations or servers on one or separate tape drives, while restoring a file stored on yet another drive, said Ray Bayer, Cheyenne director of product management.

"Since multiple backup or restore jobs can occur at the same time, the throughput of the system doubles," Bayer said, noting that the software handles 105MB a minute.

The multiprocessing capabilities are implemented via several NetWare Loadable Modules (NLMs), which are controlled by Cheyenne's Scheduler NLM and launch specific backup procedures at user-defined times.

A Quick Start backup option allows users to launch a full backup of the enterprise with three mouse clicks, Bayer said. Previously, a full enterprise-wide



The Windows interface of Cheyenne's Arcserve 5.0 Quick Access allows for enterprise-wide backups with three mouse clicks.

backup required users to set up several backup jobs for each individual file server and for groups of workstations.

File directories are displayed in graphical trees, which allows administrators to access backup histories.

For easier installation, Arcserve 5.0 features a Windows-based Setup program, which installs all elements of the system.

For better file tracking, the company integrated a Btrieve index record manager that allows for file searches using "and/or" types of criteria. In addition, the company developed links between Arcserve and its antivirus software InocuLAN, which will perform virus scans

during backup operations.

Tapes created with Arcserve 4.0 are interchangeable with Version 5.0. Cheyenne will continue to offer the DOS (4.0) version of Arcserve, Bayer said.

By August, Cheyenne hopes to have Arcserve 5.0 fully integrated with NetWare 4.0's NetWare Directory Services (NDS), allowing Arcserve 5.0 and NDS to share the same database. The current version supports NetWare 4.0 through bridgehead emulations.

A five-user version will cost \$395; a 250-user version is priced at \$2,395.

Cheyenne is based in Roslyn, N.Y., and can be reached at (800) 370-8991.

Proteon router offers ease of use to branch offices

BY JAYNE WILSON

For users at branch offices where cost and ease of use are key, Proteon Inc. is now shipping a bridging router that costs less than \$4,000 and can be installed in about 15 minutes.

The DN300n is designed for remote Ethernet LANs running Novell Inc.'s Internetwork Packet Exchange (IPX) protocol. It incorporates a 386 processor and is SNMP manageable.

The DN300n can support as many as 99 users on two Ethernet ports and offers network transfer rates of 5,500 packets per second. It also supports Open Shortest Path First (OSPF) and Point-to-Point protocols.

The product also offers a Quick Config feature that facilitates installation by prompting users through a series of questions. An automatic cable tester and LED display indicate whether the product has been set up correctly.

"To install this machine, the only thing users need to know is their LAN address," said Jay Bazzinotti, Proteon product manager. "This provides them with a low-cost branch connectivity tool."

The bridging router is often used in insurance companies, banks, and similar settings,

where it is displayed in plain view.

Users can remove the 300n card and insert it into Proteon's Series 90 10-slot hub or three-slot Boss hub, providing those machines with bridging and routing capability. The card also

"The only thing users need to know is their LAN address."

Jay Bazzinotti

is available separately for \$3,695.

The DN300n anchors the low end of Proteon's 300 series of bridging routers and is upgradable to Proteon's DN300i (IBM model) and DN300m (multiprotocol model) via an integrated boot device (IBD) for downloading software.

The DN300n is priced at \$3,995 for an Ethernet-to-Ethernet model and \$5,495 for a model for one Ethernet and two WANs.

Proteon is in Westboro, Mass., at (508) 898-2800.

Hub uses copper for FDDI speeds

BY JAYNE WILSON

Users with growing networks will soon get breathing room and a low-cost 100Mb-per-second throughput to the desktop with Crescendo Communications Inc.'s stackable workgroup hub.

The FDDI/CDDI Workgroup Hub will provide users with FDDI performance over cheaper copper, unshielded twisted-pair cabling. It ships in July.

The dual architecture lets customers mix and match FDDI and CDDI ports and offers 16

ports in a 2.7-inch-high case.

"Users can add our modular hubs as their networks grow and stack them on ribbon cable," said Jayneene Ulrich, vice president of marketing at Crescendo.

The product's AB connections (FDDI terminology for a dual attachment) allow users to stack hubs as far apart as 100 meters with copper cable or two kilometers with fiber. Users can connect the hubs from multiple wiring closets without a bridge or repeater.

An enhanced version of the Crescendo Management soft-

ware, also due to ship in July, will let users simultaneously monitor and control multiple FDDI/CDDI Workgroup Hubs from Sun Microsystems Inc., IBM, or Hewlett-Packard Co. worksites.

Base configurations of the FDDI/CDDI Workgroup Hub start with four FDDI or eight FDDI/CDDI ports. Prices start at \$645 per port for 16-port



The Workgroup Hub provides 100Mbps speed over both copper and fiber cabling.

CDDI and \$1,144 for an 18-port FDDI unit. A Crescendo Management site license is \$895.

Crescendo, in Sunnyvale, Calif., is at (800) 236-2334.

IBM gets serious about wireless technology at conference

BY CHERYL GERBER

SAN JOSE, Calif. — IBM appears to have dominated this month's Wireless Datacomm Conference, although several other vendors also unleashed products that advance the fledgling technology.

At the show, IBM announced a deal with Business Partner Solutions Inc. BPSI's Mobile Network Access software will pro-

vide one- and two-way wireless communication between IBM's AS/400 midrange system, Motorola Corp. papers, and DOS-based mobile computing devices from IBM, Grid Systems Corp., and Dell Computer Corp.

"The announcement shows IBM is getting serious about wireless messaging and about the AS/400 as a messaging server," said Eric Arnum, analyst and editor of the *Electronic*

Mail and Micro Systems newsletter.

Concurrently, Orion Network Solutions, an El Segundo, Calif.-based developer of networking software, announced it is developing a gateway that will enable messaging application software to support the AS/400 Mobile Network Access systems. The gateway is scheduled for release in the third quarter.

Performance Systems Inc.,

which provides two-way electronic messaging with its PSILink service over RAM Mobile Data's wireless network, introduced a combination hardware and software package called Wireless LAN-Pack.

The system lets LANs with E-mail connect with two-way wireless systems and the Internet. Available now, it is priced at \$5,250 for a five-unit pack through June 30.

Artisoft hubs link peer nets to Ethernet

Peer-to-peer workgroups will be capable of hooking into 10Base-T Ethernet networks with Artisoft Inc.'s new external hubs.

The T-Runner lines of concentrators will ship in two models this summer and are compatible with Artisoft's LANTastic and other networks such as Novell Inc.'s NetWare.

Both models contain a BNC connector that allows concentrators to be linked to one another with thin coaxial cable. The BNC connector works with a mix of cable types, letting, for example, users on a 10Base-T segment connect and communicate with users on a coaxial segment. A partitioning feature included in the two models automatically disables ports when links are severed.

The eight-port concentrator, T-Runner 800/TC, is priced at \$449; the 12-port concentrator, T-Runner 1200/TC, is \$749.

Artisoft, located in Tucson, Ariz., can be reached at (602) 293-4000.

— Karen Rodriguez

NeXT AND HEWLETT DELIVER THE POWER OF OBJECTS

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The opinion is from *Byte Magazine*. The fact is, NEXTSTEP is without rival as the only shipping object-oriented user and development environment.

Many Wall Street traders are already reaping the benefits of this technology, developing complex custom applications in months instead of years.

That's because NEXTSTEP allows applications to be constructed in a modular fashion, using software objects as building blocks. These objects, easily re-used



Shell refines its own E-mail answers, sans X.500

BY ELIZABETH HEICHLER

Large corporations that want to better manage their enterprise-wide electronic mail systems have an urgent message for networking vendors: Hurry up!

The networking industry's inability to supply road-tested X.500 products for managing message traffic has prompted some firms to build their own. International oil giant Shell has built its own directory database for 30,000 X.400 E-mail users worldwide as a stop-gap until X.500 standards and products mature.

Although Shell's homegrown approach is holding together for now, managers admit they will soon run out of gas. The system's growing traffic and imminent plans to move E-mail from hosts to LANs make distributed management X.500 tools essential.

"I sincerely hope that X.500 won't take as long [as X.400] before we get to operational products," said Henk Reimers, con-

sultant in message handling at Shell Internationale Petroleum Maatschappij B.V. in The Hague, Netherlands.

Traffic among these 30,000 X.400 addresses is increasing, with 60,000 X.400 messages transmitted in January alone, Reimers said.

Shell's homegrown directory database is built on top of its X.400-based Shell International

Message Interchange Service (SIMIS) backbone. The backbone links a variety of electronic mail, fax, and telex messaging systems, Reimers said.

SIMIS connects a range of office systems with public E-mail, telex, and fax. In addition to providing connectivity and routing among different systems, SIMIS supplies managers with audit-trail and charge-back information.

The newly deployed central directory for mail users, called SIDIS (SIMIS Directory Information System), is built atop a relational database. SIDIS collects, distributes, and processes E-mail addresses, acting as a central repository.

SIDIS, however, does not function as an active gateway and cannot be directly interrogated by Shell's SIMIS software.

This means the information contained in SIDIS is maintained by local supervisors, who daily update their E-mail gateways with changes to local user information. Once a week, the

Mail and cc:Mail," Reimers said. A central directory such as SIDIS will not be the best solution as LAN-based E-mail gains acceptance in the company, Reimers added.

The demands placed on Shell's messaging systems have been shaped by Shell's complex corporate structure.

Once he moves his users to LAN-based E-mail, the system will be broken up into a collection of 20 or so post offices.

"Maintaining a central directory with the hundreds of LAN servers in a LAN-based E-mail system would be impossible," Reimers said. "We want directory management to be distributed rather than centralized. That's why we must move to X.500."

Yet many products based on the 1992 X.500 specification are not available or are unproven. Those few time-tested products that are available lack key capabilities such as access-management functions, Reimers said.

It is Shell's early experience with X.400 that is causing Reimers and other managers to wait for acid-tested X.500 products. "When X.400 came along, Shell was among the first to jump in," Reimers said. "With X.500, Shell does not want to repeat the experience of being on the 'bleeding edge,' working with products based on an immature standard." □

—Elizabeth Heichler is a European correspondent for IDG News Service.

Shell's homegrown approach is holding together, but managers admit it will soon run out of gas.

local E-mail gateways are updated with directory information from the SIDIS database. Built-in filtering mechanisms ensure that sites get only what they need from among Shell's 30,000 X.400 addresses.

Although SIDIS efficiently manages directory information from host-based mail systems, it will not suffice as Shell's E-mail traffic becomes distributed across LANs, Reimers said.

"Our biggest growth is LAN-based E-mail, such as Microsoft

At the top of the corporate structure are two parent companies, Royal Dutch Petroleum and Shell Transport and Trading Co. These firms own more than 1,000 operating companies in more than 100 countries. Downsizing from host to LAN-based messaging systems is taking place throughout this maze. In the Netherlands, for example, Reimers currently has 6,000 to 7,000 E-mail users on a host-based system, with addresses maintained in a single directory.

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and maintained, take the place of complicated and error-prone computer code.

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Wildcat BBS includes graphics

Mustang Software Inc. has developed a graphical interface to the 5 million users who log on to BBSes every month.

Version 3.9 of the Wildcat Bulletin Board System (BBS) and Version 3.1 of Qmodem Pro communications software add support for the Remote Imaging Protocol (RIP) graphical interface, an emerging standard for BBSes.

Mustang's RIP-equipped software can send full-screen graphics and lets mouse users select BBS commands by clicking on

screen prompts. To access Wildcat's RIP graphics, the incoming call must come in over Qmodem or other RIP-equipped communication software.

The release includes a fax-sending module, allowing Wildcat to make test and graphics PCX files available to callers via fax.

Both products are available now. Wildcat 3.9 costs \$129; Qmodem 3.1 costs \$99.

Mustang, in Bakersfield, Calif., is at (805) 395-0223.

— Cheryl Gerber



Point-and-click log-ons come to BBS users with Wildcat's latest release.

Routers cut telecom costs

Microcom to offer self-adjusting WAN software

BY TORSTEN BUSSE

Microcom Inc. will ship next month self-adjusting software for its bridges and routers to help managers cut wide area network telecommunications costs.

Microcom's MBR 7.0 remote bridging and routing software, which works with the company's Bridge/Router models MBR/6000 and MBR/6500, routes TCP/IP and IPX traffic over Token Ring or Ethernet.

When used for routing networks traffic to and from remote sites over leased telecommunication lines, the software increases routing capacity by dialing circuit switched lines when data traffic hits peak levels.

"[MBR] watches the leased line, and when it hits a certain level of congestion or capacity, it will dial up switched-56Kb-per-second lines or dial up a modem sending the data over three additional links," said John Hann, Microcom marketing manager for internetworking products.

When the excess capacity is no longer needed, the circuits are automatically disconnected, Hann said.

Thresholds for triggering the bandwidth adjustments are all user configurable.

For Novell Inc.'s NetWare traffic, the software offers the IPX AutoLink feature, which connects remote LANs over ISDN, v.32bis modems, or switched-56 lines only when data transfer occurs. This eliminates the need for a permanent leased line.

Remote sites typically use leased lines for 1 to 2 hours a day, Hann said. Microcom intends to offer the automatic feature for TCP/IP traffic in a later version of MBR.

If a leased line fails, the software can automatically redirect data traffic over a circuit-switched network.

The MBR/6000 and MBR/6500 support SNMP and can be managed out of band via the company's Carbon Copy remote communications software, or with Hewlett-Packard Co.'s OpenView Network Node Manager. Both let users configure parameters and thresholds.

MBR/6000 and MBR/6500 starter kits — including WAN and LAN interface cards, the MBR 7.0 software and RS-232/3.5 cables — are priced starting at \$4,299 for a two-port Ethernet version and \$4,799 for a Token Ring version.

Stand-alone plug-and-play bridge/routers built around a PC/AT are available starting at \$5,199 for the two-port Ethernet version and \$5,699 for the two-port Token Ring version.

Stand-alone cards to develop by late this year a version of its LANLord desktop management systems, which will run on IBM's LAN View management platform. LANLord NV will support IBM's Presentation Manager interface and will communicate with OS/2, DOS, and Windows agents. The product will provide desktop inventory, monitoring, and software metering capabilities.

Microcom is headquartered in Norwood, Mass., and can be reached at (800) 822-8224.

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LAN Talk / Paul Merenbloom

Configuring SCSI devices doesn't have to be a headache

If you want to add CD-ROMs to your network, there's a lot to learn. CDs (at least most of them) are built using SCSI interfaces. And, if you've ever had the experience of installing Vendor A's SCSI controller with Vendor B's disk drive and Vendor C's software, you may know why it's called scuzzy.

For a good introduction to the subject, read Brian Livingston's May 10 "Window Manager" column (page 26).

Today, tens of thousands of LANs use SCSI technology for disk and/or backup tape services, but Small Computer System Interface has its share of problems.

Addressing a void in the SCSI "standards" niche, Adaptec Inc. offered its SCSI Programming Interface (ASPI) as a public-domain definition. Soon after that, many hardware and software vendors adopted this specification and off-the-shelf interoperability of SCSI devices became a reality.

Even still, configuring SCSI devices can be a challenge.

The hassle begins with setting I/O, memory address, and BIOS enabling/disabling jumpers. Next, assuming you don't have any hardware conflicts, you get to install the drivers (and their multiple parameter switches) to enable the operating system to properly recognize the devices.

Finally, assuming all this has gone well, it's time to get the software to "talk" to the devices on the SCSI card. Fun, huh?

I agree that you should stay away from cards that Brian labeled "bastard SCSI," or proprietary SCSI cards developed by individual vendors. Stick to products from companies such as Adaptec Inc., Bus-Tek Corp., and Future Domain Corp. They're proven and state of the art.

If you are buying the SCSI card and related equipment now, take a serious look

at fool with pins and jumpers.

Using ASPI cards, hardware-independent programs such as ARCServe can automatically detect tape backup drive addresses, capacity, format, and more. Some Windows programs even auto-detect scanners to use with graphics applications and write-once, read-many or magneto-optical storage devices. But first you have to properly install the ASPI support software.

After fighting many battles with

Windows files. Best of all, it worked on the first pass.

CorelSCSI offered many of these same services and supports most every SCSI device known, but, in my opinion, the set-up using EZ-SCSI was a bit easier.

Once you have the hardware and drivers worked out, there are a few rules of SCSI to keep in mind: A maximum of seven devices is "attachable" to each controller card; each device must have a unique address; each device must be recognized by the operating system; and SCSI cabling and termination must be done correctly or it just won't work.

There is also a quirk I should let you know about. It seems that some SCSI devices are "self-terminating." In several instances, I have installed SCSI cards in devices exactly as directed by the manufacturers' instructions only to find that the devices did not work. The problem turned out to be "overtermination." By removing the SCSI terminator cap from the last device on the chain, everything worked fine.

Next week we'll look at the CD-ROM sharing software.

Paul Merenbloom is manager of information technology at Otsuka America Pharmaceuticals, in Rockville, Md. Send comments to him via CompuServe at 70743,3524 or via MCI Mail at **Paul.Merenbloom**.

EZ-SCSI configured everything — CD-ROM, hard disk, tape backup — in just 10 minutes. No kidding.

at 32-bit EISA cards, Micro Channel Architecture (MCA) cards, or SCSI interface cards such as the new Adaptec 1542-C cards. These cards are fully configurable via software — no more jumpers to set. Using either the MCA or EISA configuration programs, these cards can be configured and conflicts arbitrated in a matter of minutes.

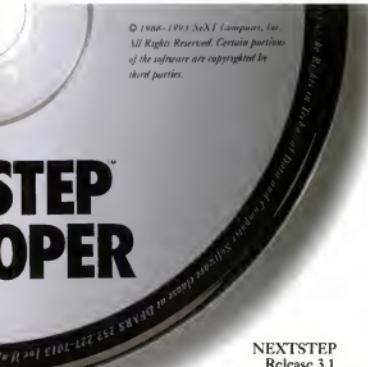
The Adaptec 1542-C, although it lacks the auto-configuration offered by MCA and EISA, allows you to manage its settings via software instead of having to

jumpers, CONFIG.SYS entries, and device driver parameters. I discovered EZ-SCSI from Adaptec and CorelSCSI from Corel Systems Corp.

EZ-SCSI is a LAN administrator's dream. EZ-SCSI configured everything — CD-ROM, hard disk, tape backup — in just 10 minutes. No kidding.

The program correctly identified the SCSI card I was adding, the one I was using (for a disk drive), and the devices attached to each, and it made all of the necessary entries to my CONFIG.SYS and

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TO THE EDITOR

Once burned

As a "heavy user" of MS-DOS, I was delighted to purchase Version 6.0, which I thought would have the same easy installation as DOS 5.0. I was able to install the new operating system, and no problems appeared in the first two weeks.

Then, one day, in the middle of an application (FoxPro), the system crashed. Needless to say, the hard disk (a brand new ST3283A) turned out to be in perfect shape.

Reading your articles about DOS 6.0, I was able to identify the same type of problem as the ones reported as "mysterious."

In my opinion, there is nothing mysterious. It is clear that Microsoft rushed the product on the market without enough testing and without caring about the end-users.

I was the 38th person on hold on the DOS 6.0 tech support line; the wait was estimated to be 2 hours. The price of the phone call would eventually equal the purchase price of 6.0. I gave up, reinstalled 5.0, and am looking forward to IBM's new DOS.

Microsoft should publicly apologize for the inconveniences and eventually set up an 800 number. Thank you, *InfoWorld*, for the professional way you have helped PC users.

Valentine Mayer
Wanaqua, N.J.

Twice shy

Atta-boys-and-girls to Stewart Alsop, Kevin Strehlo, and the entire Test Center crew for their fearless coverage of the problems with MS-DOS 6.0. As the owner of a computer training company that specializes in accounting applications, I view product upgrades with mixed emotions: excitement and fear. Backup mania prevails. You must have two verified tape backups before we begin.

I can just imagine telling a client a month later when data corruption occurs: "Oh, by the way, we'll have to restore to your pre-upgrade backup and you'll have to re-enter a month's worth of work." Get real.

You don't have to be a rocket scientist to realize that many editors are weenies who don't dare offend major advertisers with bad product reviews. Thank goodness that Stewart Alsop is one of them. As for Mr. Gates, maybe he should read Tom Wolfe's *The Bonfire of the Vanities* to see what happens to Masters of the Universe.

Elizabeth Way
President
Abaca Computer Solutions Inc.
Boynton Beach, Fla.

Key to success: backup

Our institution is a single anecdotal data point, but I've been quite pleased in the enhancements that MS-DOS 6.0 has delivered. The operating system offers a single vendor focus of support, eliminating the vendor-to-vendor finger-pointing we've experienced all too often.

To date, we've had no suspicious

problems with DOS 6.0. Our formula for success has been to use a portable tape machine to do a complete file-oriented backup prior to the DOS 6.0 upgrade, reformat the drive, enable DoubleSpace compression, then restore the user's files.

We've found that the backup-format-restore operation saves time over trying to retroactively compress a drive that may already be riddled with fragmentation, damaged files, and lost clusters.

Finally, we've found that caching hard disk writes adds very little performance benefit to the ways in which most of our users work. We disable write caching by specifying SMARTDRV.H. This presumes that the actual physical hard disk is mapped to H, with DoubleSpace serving C. This avoids problems due to users shutting their machines off before the write cache has drained. No mysterious sorcery is required to assure data integrity.

Bill Mayhew
Computer Services Electrical Engineer
Northeastern Ohio Universities
College of Medicine
Rootstown, Ohio

DOS prayers

Kevin Strehlo's lament is one of the best pieces to appear in your pages. (See Second Look, April 26, page 1.) Although MS-DOS is not dead, it is killing off big chunks of our lives by demanding that we accommodate its quirks and limitations.

We acquire mysterious and secret knowledge of how to placate DOS. We practice DOS rituals. Less experienced DOS users are impressed. But those who work with better operating systems wonder what all the fuss is about and why we sacrifice ourselves to the great DOS.

Even Microsoft (through Windows) is trying to let us know that enough is enough. Moving on may not look easy, but standing pat is increasingly untenable.

Jordon Rosenberg
San Francisco

Born yesterday?

Write-behind caches didn't fall out of the sky yesterday. They have been in widespread use at least since the release of Microsoft's SmartDrive utility with Windows 3.1.

Continued pending on write-behind won't compensate for what is obviously some fairly sloppy test work on your part: If you had run the tests on a control system without compression, the odds are good that the write-behind would not have caught up by reboot either.

The other thing that didn't fall out of the sky yesterday was the DOS 6.0-compatible upgrade of SpinRite that I (and presumably a lot of others) paid for and was promised by Gibson Research Corp. Better tools for working with DoubleSpace-compressed disks would be far more welcome than continued backpedaling on DoubleSpace.

Will Kiling
Los Angeles

Figures don't lie

Hats off to Cheryl Currid for her article regarding system cost analysis. (See May 10, page 79.) As a trainer, I am often asked for advice on what kind of computer people should buy. My immediate response is, "What will you do with it?"

I tell my students, clients, and anyone else who will stand still long enough that if a salesperson doesn't ask you why you want a computer (or what you will use it for), run, don't walk, the other way. Any salesperson or consultant who doesn't take the time to understand the organization's total information needs is worse than nothing at all because he or she will cost the organization money — both in terms of the equipment and in terms of lost productivity.

Keep sounding the warning, Cheryl. We all need the reminder once in a while.

J. Joseph Kabanek
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Working with vendors

I've been following the gripe line discussion and have a constructive suggestion for those on the user side: When you have problems with software that is important to your work, consider an attempt to become a beta tester for that software. This gives you many advantages:

1. You get an early view of changes to the software in the next version that might adversely impact you.

2. You get an early chance to help weed out any bugs that might adversely impact you.

3. You get a chance to offer some suggestions and get feedback on them at this point in the development cycle.

4. You get a jump on new features in the next version.

5. You will gain a much greater appreciation for how difficult a task making software is from the vendor's side of things.

Beta testing does require a real effort. It is very demanding work. If the idea of becoming a beta tester does appeal to you, pick a software product that you use passionately — software that you can't live without.

Of course, you are not too likely to become a beta tester by being rude or threatening to the vendor. Try to work with them. You never know — you just might be building a safety net that can catch you in the event that your current job disappears.

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From the Editor / Ed Foster

Keeping big iron is fine — if your business never changes

Long ago, when I was a young journalist, I spent a few years in Japan. Near where I lived there was a small but bustling *pan-ya* — a bread shop — where I often bought various staples such as sake and beer.

One night coming home from work I found the elderly lady who ran the place sporting a new cash register in place of her old abacus. Her husband, whom I never saw, had bought it for her so she could serve customers faster, she told me somewhat dubiously. She was having a little trouble learning it, but progress sometimes does require us to take a step back before we go forward.

A few days later, I saw that the cash register had disappeared and the *pan-ya* proprietress had returned to using her trusty abacus. The cash register, she complained, was completely *dame* — no good. She was faster with the abacus, she would always be faster with the abacus, and that was that.

I am reminded of this scene by some of the recent articles about how hard downsizing is. A *Wall Street Journal* article a few weeks ago noted: "Indeed, boardroom disillusionment about the pace of downsizing has prompted some analysts to think what last year would have been unthinkable: that demand for mainframe computers could surge as companies realize that the downhill shuffle isn't all it was cracked up to."

No one's saying that client/server computing isn't still the wave of the future, but there seems to be a feeling that maybe the mainframe has a more



significant role in the future than we thought. Like the *pan-ya* lady and her abacus, some IS departments may decide that the mainframe is always going to be the best tool for their mission-critical applications. They've done it on mainframes before, they'll do it on mainframes in the future, and that's that.

That would be a big mistake.

The woman at the *pan-ya* was certainly right that the abacus was the best tool for the work she did. A skilled abacus user can do simple transactions as fast as you can with a calculator. She could handle her stream of customers just fine with the tool she knew so well.

I haven't been back to that neighborhood in years, and she would be long retired in any case, but I wonder if that *pan-ya* is still there. Some of the smaller neighborhood shops in Japan are disappearing as supermarkets and discount stores become more popular. If she were still working, she might find her store losing business to the high-volume operations where cash registers are a necessity.

The tool you've learned to use for the job you've always done is going to be hard to replace. If you are to remain competitive in the marketplace, however, there will come a time when you have to change the way you work. If you don't, you will find you have a tool that's really good at doing something no one needs.

It's easy to see why an old-line IS department might want to continue focusing its development

efforts on the mainframe platform it knows best. But if mainframes were the answer, PCs would never have started showing up in the corporate world in the first place. It was because IS departments were so backlogued and unable to respond to the growing information needs of their organizations that business users found PCs so useful.

Certainly downsizing is no piece of cake, but neither is writing new mainframe application. The products that make it possible to move mission-critical applications to networked PCs are still just emerging, and there are lots of missing pieces and things that don't work quite right. The same, however, can be said of the mainframe environment, in spite of its much greater maturity. What can't be said of the big iron is that we can expect it to get much better. As object-oriented and GUI environments for the PC environment mature, however, we can be certain the downsizing task will become much easier, particularly for those who are starting to learn how to do it now.

Certainly it's true that most corporations have too much time, money, and data invested in their big systems to just toss them all out tomorrow. That shouldn't lead anyone to think, however, that mainframes are a viable alternative to PCs for the future. They will only be the best tools for the job if they're the only ones you know how to use.

Ed Foster is editor of InfoWorld. He gets electronic mail at MCI account 584-3453. Or, you can call (800) 227-8365, Ext. 710, to report a gripe you have with a vendor.

Peer to Peer / Kent Summers

Adobe's Acrobat document interchange solution is too little, too late

Kent Summers is an independent consultant specializing in document automation technology planning.

Not too long ago, Adobe Systems Inc. stuck an important stake in the ground around which consumers could measure a critical software need: printing. If an application provided the necessary features, and it was PostScript-compatible, chances were you weren't wasting your money. So, I've always kept my eye on Adobe to see how it would evolve PostScript. Would it someday be able to edit a PostScript file produced in another application and pass it on? Would I be able to search through a PostScript document on-line for key words or phrases? Would Adobe ever provide a solution for streamlining on-line document-based communication?

I recently visited the Spring '93 Seybold Electronic Publishing Conference in Boston and sat in on Adobe's presentations, mostly to see what all the hoopla about Acrobat was all about. I would like to offer my observations.

Carousel seems to have disappeared; Acrobat is now its official name. I heard something awhile back about a Kodak trademark infringement. Or maybe the name was changed because Carousel took far too long to deliver and analysis were having a field day with the name.

Regardless, Adobe is blowing smoke. Anyway, I didn't see any actual software in the half-hour Acrobat presentation. So I turned to the printed materials for some information.

Acrobat is designed to provide a document interchange solution for those of us who own different types of computers and applications, produce a lot of printed material, and would like to share the information within and outside our organizations. But this technology is too little, too late. And this is frustrating.

Acrobat displays a page on the computer screen that has been formatted for a printer, without the capability to search for words or phrases. Nothing new here. The "page flipper" paradigm has been around for a long time, and common wisdom has it that it's just not suitable for on-line document delivery. One document view assumes that the same document's composition and construction is effective (even acceptable) for both printed and on-line output. This is OK if you are into spending half of your time scrolling, panning, and zooming instead of reading. Make no mistake — you will need to read at least as much as you did before, because you cannot search for things.

Adobe's Portable Document Format knows document composition (fonts, layout, etc.), but it has no knowledge of

a document's components, its structure, or the content of the information. Acrobat should therefore add some "convenience value" to high-end office communications, such as high-resolution printing of fax and E-mail. But it will never be capable of handling the meat and potatoes information needs of a company. Acrobat will never serve information from a central information

Acrobat seems to have no underlying customization tools.

repository to supply document components based on nomenclature, structure, or semantics to different parts of an organization that will serve different audiences. This is clearly where enterprise-wide publishing technology is headed; Acrobat completely misses the boat.

Adobe says the product is designed for information consumers. But outside of the standard user-level Windows tricks, there doesn't seem to be any underlying customization capability or tools for independent software vendors to develop custom document viewer interfaces

to meet specific platform or application style requirements, different types of information, or a specific audience. Assuming that a single viewer interface is appropriate for every type of document is risky at best.

Reading the literature carefully, I concluded that some pieces of Acrobat are less ready to release than others; components are described in the future tense. Ultimately, however, Acrobat's success in the document automation market hinges on several things: tapping uneducated consumers swayed by glitter, not substance; persuading people to feel comfortable locking their real assets (information) into Adobe's proprietary format; appealing to those users who have not gone with an SGML-based document management approach; and releasing the product in three months — before Adobe has to rename it again. One thing is for sure: Unless people wake up and smell the coffee, Adobe will surely accomplish what it has been so successful at in the past — holding up people's purchasing decisions.

"*Peer to Peer*" gives readers a forum for discussing computing and management issues. Send submissions to Rachel Parker, opinions editor (MCI Mail 340-4371). Submissions can also be faxed to (415) 358-1269.

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We now do for the workgroup w

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*AppleShare administrator average \$33,000 per year less than other systems, according to the Business Research Group (BRG) study "Apple's Costing for PC LAN Administrators - A Comparative Analysis of 5 Leading PC LAN Environments." Environmental comparisons were approximated.

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at Macintosh did for the desktop.

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With the optional built-in DAT drive and backup software, you can automatically store up to 6GB of data on one 4mm tape cartridge without interrupting the group's day-to-day work.

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The new Apple
Workgroup Server 95





From the Ether / Bob Metcalfe

Novell counters bogus client/server patent

(a carefully chosen NetWare user) Here on March 22 (page 52) I started digging into a lawsuit filed against Novell Inc. and the Bank of America (a carefully chosen NetWare user) by Roger E. Billings, holder of a 1987 patent on what are now called client/server databases. The news today is that Novell has filed 400 items of alleged prior art in San Francisco with Federal Judge Eugene Lynch, whom I hope will invalidate the Billings patent summarily, long before the jury trial expected in 1994. Today I'm asking whether this case of gross patent abuse is the one we should use, finally, to provoke long-needed reform of our patent system.

After my second Billings column, (April 26, page 52), I called Novell president Ray Noorda to encourage him to fight the bogus patent (to use a familiar phrase) all the way to the Supreme Court rather than settle with Billings. I feared that even an unjust settlement might at some point seem to be in the best interests of Novell shareholders, given the way our lawyer-enriching justice system tends to work. But settling would create, I believe, yet another royally extorting monster.

Noorda, who for decades has worked to expand the computer industry, told me that he does not intend to damage that industry by settling with Billings. I was thrilled to hear this, but of course, what else could Noorda say?

Also in my April 26 column, I asked for help in getting the U.S. Patent and Trademark Office (PTO) to re-examine the Billings patent. Following that, I soon heard from a succession of inventors and lawyers. They described how the flawed patent re-examination process is rather lopsided in favor of patent holders, and how, if I weren't careful, a

re-examination could easily backfire on me to Billings' benefit against Novell.

Well, I feel it is the purpose of patents to encourage people who know how to invent, not people who know how to abuse the patent system.

So here's a thing that needs fixing. As in other countries, our PTO should open up its examination process rather than routinely issue lightly researched patents, the validity of which must be contested thereafter outside the PTO at great expense among hired expert witnesses, patent litigators, judges, and juries, most of whom are not computer technologists.

Patents should encourage inventors, not abusers of the patent system.

Within hours of being convinced to delay filing with the PTO for a re-examination of the Billings patent — to give Judge Lynch time to string the patent up — I received a letter from Billings (which *InfoWorld* reprinted last week, page 62). He characterized Novell's filing of 400 items of prior art as an act of desperation and included a filing fee check for \$1,000 made out to the PTO, taunting me — "Take your best shot!"

Billings calls me un-American because, he says, I think that an inventor has no right to receive royalties. But of course I do think inventors should get royalties; it's just that in this case, in my expert opinion, the patent is not valid.

And so just how did Billings get his bogus patent? Having read his patent

"wrapper," I see that Billings first filed his patent in 1982, and not surprisingly, it received a "final" rejection. He "continued" the filing in 1986, and it was again rejected, even on the basis of the scant prior art that Billings submitted. He continued the filing a second time in 1986 and, after getting assigned a new, soon-to-retire examiner, he was issued the patent in 1987.

According to experts who have responded to my Billings columns, patent filing continuations have their legitimate uses, but they are also frequently abused. Continuations let you delay your 17-year patent monopoly, while keeping your early effective filing date (not so early in the Billings case). During the delay, the market may grow, you can update your claims to cover products introduced while your patent was pending, and you get a shot at a new, more agreeable PTO examiner. Let's fix these loopholes.

Unless I am buried in your letters to the contrary, or unless my upcoming interview with Billings turns earthshaking, this is my last Billings column. My files are collecting strange newspaper stories about Billings going back to 1981. In a recent press release from a big time PR agency, Billings has challenged Novell's chief NetWare architect, Drew Major, to a public debate — a blatant publicity stunt.

It's suddenly obvious to me that Billings, for all the trouble he causes, perhaps even more than the royalties he hopes to collect, enjoys seeing his name in the papers.

Bob Metcalfe is publisher of *InfoWorld*. He invented Ethernet at Xerox PARC in 1973 and founded 3Com Corp. He receives E-mail via the Internet at bob.metcalfe@infoworld.com or at 524-1127 on MCI Mail.

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You may also send one of these accounts through the newswheel combining the first with the last name of copy on the editorial masthead. (For example, Rachel Parker is parker@mcimail.com.)

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ENTERPRISE COMPUTING



Apple Open Collaboration Environment

Combining personal communications with workgroup computing

BY DAVID BAUM

You're a manager at a busy electronics firm getting ready for your next user group meeting. You have finalized the agenda and it's time to get approvals from the rest of the committee, a diverse group located at various companies around the country. What's the quickest way to get the information out?

One member of the committee is part of your own company. He is easy to communicate with through QuickMail. You simply launch the electronic mail application, address the message, attach the agenda, and send it off.

The next message is easiest to reach through MCI Mail. No problem: You fire up your modem, log in to MCI Mail, track down her MCI Mail address, upload the agenda file, send the message, and then log out. MCI tends to mess up your formatting, but at least she will get the information. You can dial in again in a couple of hours to make sure the message got through.

The quickest way to reach the third member of the committee is by fax. Now, this will involve a bit more effort on your part. You'll have print out the agenda, fill out a cover sheet, leave your workstation, and take the papers over to the fax machine. It's already in use, so you take it to your secretary. She'll send it right after lunch.

It's great to have all these options for communicating, but if Apple Computer Inc.'s Open Collaboration Environment (AOCE) becomes a reality, there will be a much easier way to achieve the same results.

Once AOCE services become wide-

spread, all the people you communicate with can be represented by electronic information cards in your desktop directory. The members of the user group committee could be grouped under a common group icon. To send your agenda to each member of the group, you would simply drag the agenda document to the group's icon.

The rest, as they say, is history. Each person in your directory will have a preferred mode of communication associated with their information record, along with all necessary routing information. You will need to log in to both QuickMail or log in to MCI or carry documents to the fax machine. It all will be done for you automatically. Each information card includes a known communication path from your desktop to theirs.

AOCE will even remember where to send your messages when you are away from the network. Perhaps you finalized the agenda using your laptop computer on an airplane. You dragged the document to the User Group Committee icon and forgot all about it. The next time you plug into a network, the messages will be sent automatically, even if it is days or weeks later.

Sound like an impossible dream? It may happen soon if Apple can succeed with its vision of collaborative computing.

VISION BECOMES REALITY. AOCE consists of a series of modular extensions to the Macintosh System 7 operating system. The modules will provide system-level interprocess and cross-application communications to Macintosh applications. The AOCE functions include mes-

saging, electronic mail, directory services, authentication and privacy, and digital signature capabilities to all Macintosh applications.

* Messaging allows applications to exchange information in a consistent way through a common set of AOCE application programming interfaces (APIs).

* E-mail enables users to exchange letters and documents from within their applications.

* Directory services provide a common point of information storage for communicating with various users and groups of users.

* Authentication ensures users that all communications are kept secure and private.

* Digital signatures allow users to attach reliable approval signatures to documents.

As Apple sees it, these are the essential ingredients of a new type of technology, which they call collaborative computing.

"It's not so much a breakthrough in technology as it is in scope," says John Murphy, vice president of marketing at Shana Corp., in Edmonton, Alberta, Canada, a vendor of electronic forms products for the Macintosh. "There are already digital signature technologies out there, for example. But with AOCE, these capabilities will become commonplace in many applications as regular fixtures on the desktop."

Integrating these communications techniques into the Macintosh operating system is similar to work conducted by the Department of Defense in the 1970s in which the TCP/IP network protocols were integrated into the Unix operating system kernel. That work, conducted for

the DOD by the University of California at Berkeley, spawned a diverse array of products and wide-area communications techniques. That work helped spawn the Internet, an immense TCP/IP-based computer network that spans the globe.

Apple's collaboration technology could have equally far-reaching implications for workstation users. Apple President Michael Spindler, speaking at a recent public forum, said PC market growth has slowed to single digits because applications are failing in their mission to create new, more effective ways of carrying out business tasks.

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Apple aims to do just this with AOCE — create applications that can be used in tandem to execute the multiple tasks workers must carry out in order to complete a project. With AOCE, and the third-party products it will spawn, these tasks will be reduced to a few clicks of a mouse.

For Shana, AOCE will help cut down the paper trail associated with the creation and routing of forms-based information, such as customer orders and invoices.

"What often causes a document to be printed is the need for a signature," Murphy says. "Once this can be handled reliably on-line, companies will be able to route documents electronically through approval and review processes."

At any point, users can "sign" a document simply by dragging it to their personal signer, Murphy says. The digital sig-



Pep Club 4; JOYCE ALLEN
Debate Team 4; Tennis
National Honor Society 1,2,3



High School



is prescribed for Graduation
of the Tamalpais Union
hereby awarded this

entry-eight

Tamalpais

Has satisfactorily completed
the requirements for graduation
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AOCE architecture

Service access module interfaces

Messaging	Directory	Authentication		
Apple	Third party	Apple	Third party	Third party
• Peer-to-peer dial-up	• VoiceMail	• AppleTalk	• X.500	• Kerberos
• Peer-to-peer AppleTalk	• Fax	• Directory server for AppleTalk	• In-house directory	
• Messaging server for AppleTalk	• X.400		• DEC DOS	
	• QuickMail		• Telephone directory	
	• Profs			
	• SMTP			
	• MS-Mail			
	• Novell MHS			

nature capability can be used from within any application, not only to positively identify the person who approved the data, but also to detect whether a document has been altered since it was signed.

Central to Apple's plans is the concept of mail-enabled applications, which will facilitate the routing of such documents. Users will be able to send their work directly from one program to the next rather than the old way of doing things: Quit the current application, launch the E-mail application, type a message, and attach the file.

"A Send command in the Macintosh File menu will become as ubiquitous as the Print command is today," Murphy says. "If you want to send the spreadsheet you have just completed to your colleague in another region, you can do so without even exiting the application."

Selecting Send from the File menu will return a menu of all users in your directory. You simply select the user you want and let your system handle all the underlying protocols, routing addresses, and interapplication intricacies. Each user information card in your directory will have a chosen mode of address associated with it, as well as an alternate mode if a message doesn't get through by the first mode for any reason.

"Apple has provided us with a solution to a problem that we didn't know we had," says Mike Tippets, a technical product manager at WordPerfect Corp., in Orem, Utah, who has helped his company implement AOCE. "It's hard to grasp new technologies until you can see them in action. People were happy with Liquid Paper until someone brought in a typewriter that had an automatic delete key."

Tippets has put his finger on the major challenge Apple faces with AOCE: helping companies realize that they have a problem in the first place. What is the problem? Lack of collaboration among workgroups, cumbersome workarounds to mask system differences, and a paper trail that doesn't seem to shrink despite the best efforts at automating business processes.

WORKING TOGETHER. Consider another example: a project management application designed for use by a single individual. Typically, a team leader working

with such a program receives schedule and task information from each team member in some manual form, putting together a new project timeline at periodic intervals. Not only is this process time-consuming, but team schedules quickly become out of date unless each member conscientiously contributes status reports and updates.

A truly collaborative project management application should automatically remind team members of upcoming deadlines, regularly request status information, enable routing and sign-off of project changes, and interact behind the scenes with other applications, such as calendaring, authoring, and document management. The net result is efficient and effective communication.

Some applications today have made stabs at collaboration, but because these capabilities are implemented at the application layer rather than at the system level, they utilize different conventions and require varying levels of user input. To truly facilitate collaboration among

computer users, a common, system-level communications infrastructure is required. That is exactly what Apple is shooting for with AOCE.

"The loose strands of voice mail, fax, electronic mail, and remote paging will be woven into an integrated communications fabric," says Andy Lauta, Apple's AOCE product manager. "The sending and receiving of messages and documents through diverse media will become an integral part of applications."

"All of a sudden my E-mail becomes my document," Tippets says. "In WordPerfect, after you finish writing a document you simply click on a Mail button and the familiar mail header appears."

At the desktop level, AOCE software provides users with a mailbox icon, a directory browser icon, one or more personal directories, and directory templates. All of the user's correspondence — messages from multiple E-mail systems, voice messages, faxes, paging notifications, documents created in any application, and even QuickTime movies — arrives in the mailbox.

AOCE software also includes a built-in dial-up service that enables users to communicate with one another in a peer-to-peer fashion. Equipped with the appro-

priate service access modules, they can send and receive fax documents from their Macintosh desktops. Those with subscriptions to public email services, such as MCI Mail, AppleLink, or CompuServe, and the appropriate service access modules can use AOCE as a consistent environment to collaborate with others through these public services.

WHAT'S THE CATCH? The catch is that service access modules must be either obtained from third-party developers or created in-house. Apple's grand vision for collaboration must begin with a massive cooperative effort by other vendors. It is here that the success or failure of AOCE ultimately lies.

"Apple is putting the building blocks in place, but in order for AOCE to be successful, third-party software developers must build their products on top of the AOCE foundation," says Andrew Woofe, an independent analyst and president of Lipa Strategic Technologies, in Boston. "Any Mac user will find the AOCE services useful, but their real purpose is to provide developers with a fully defined set of APIs to access these services from the applications they create."

How substantial will this development effort be? "It's a fairly easy implementation," Tippets answers, describing his company's recent development efforts to add AOCE compliance to WordPerfect applications. "And the benefits are numerous. The more vendors use the technology, the more uses we will find for it."

AOCE code is currently in beta use, and the add-on modules should be commercially available to third-party vendors and corporate developers by the end of the year. This means that in about six months from that time we should start seeing AOCE-compliant products.

Apple is encouraging vendors to get the AOCE services implemented first in their Macintosh products and to stand by for delivery of similar functionality on other platforms. Unfortunately, not everyone is convinced that this is a realistic strategy.

"A lot of Macintosh ISVs are trying to produce multiplatform products," Woofe says. "They need to be free of anything that will tie them to a single platform. Consequently, some of them are staying away from AOCE despite all the functional benefit it will bring them. If they allow digital signatures on their Macintosh products but can't support those capabilities under Windows, they are dead in the water."

Apple faces a difficult problem, Woofe says. If they come out too aggressively with AOCE for Windows, it could shift their customers off of Macintosh hardware. They must walk the fine line between adding unique value to the Macintosh platform and satisfying the demands of the industry for functional interoperability.

Yet Shana is comfortable with Apple's approach. "We see it as a staged process," Murphy says. "It will take a while before customers even start using all the pieces on their Macs. We're confident

that AOCE will be ready for cross-platform implementation in a reasonable length of time."

On the other hand, Mitch Miller, director of technology at CollegeView in Cincinnati and a former multimedia specialist at Apple Computer, has decided against AOCE for his company's college database application, currently running on the Macintosh. He says even if AOCE makes it to Windows, there are countless other platforms that lack the requisite graphical functionality for AOCE-type processing.

"Our Macintosh application must communicate with different types of mainframe systems at colleges across the country," he says. "They aren't as sophisticated as Macintosh or Windows on the user side."

RIVAL SCHEMES. Apple's plans are well laid, but other vendors have similar schemes. To the victor, the spoils are rich: nothing less than control of the corporate application environment. Microsoft Corp.'s Messaging Applications Programming Interface (MAPI), Lotus Development Corp.'s Vendor Independent Messaging (VIM), and the X.400 API Association's XAPI are all vying with AOCE to become the industry standard for cross-platform, interapplication communication.

But Apple and industry observers claim these other services aren't on par with the potential of AOCE. "MAPI enables mail-capable applications for Windows, but it lacks many of the unique functions of AOCE, such as the electron-

The loose strands of voice mail, fax, and E-mail will be woven into an integrated fabric.

integrated communications fabric," says Andy Lauta, Apple's AOCE product manager. "The sending and receiving of messages and documents through diverse media will become an integral part of applications."

"All of a sudden my E-mail becomes my document," Tippets says. "In WordPerfect, after you finish writing a document you simply click on a Mail button and the familiar mail header appears."

Apple fosters teamwork with integrated communications

AOCE consists of the following modular extensions to System 7, making communications an integral part of personal computing:

- **Messaging:** Allows applications to exchange information
- **Electronic mail:** Enables users to exchange letters and documents
- **Directories:** Provides an information store required for collaboration between applications and users
- **Authentication/privacy:** Ensures users that all communications are secure and private
- **Digital signatures:** Allows users to attach reliable approval signatures to documents

ic business cards, digital signatures, and security," Lauta says. "AOCE integrates all these pieces at the operating system level. You can't get that on Windows today."

"A lot of people are talking about E-mail and messaging," Lauta continues. "And certainly AOCE supports these things. But ultimately it is about something much larger, a new computing paradigm. We're combining the concepts of workplace computing with various forms of electronic communications in a very robust way."

Tippets echoes Lauta's enthusiasm. "As more and more vendors implement the AOCE specifications into their products, the total number of people we can communicate with, and the ease with which we can communicate with them, will blossom." □

David Baum is a Santa Barbara, Calif., writer specializing in PC and Macintosh application issues.

ENTERPRISE COMPUTING / MANAGEMENT

PC managers consumed by software upgrades

But automating software distribution is a daunting task in complex LAN environments

BY DOUG VAN KIRK

What's the biggest time-waster in PC administration? Ask any support manager and they will tell you it's the tedious, repetitive task of installing software. Schlepping application from one workstation to the next is about as much fun as watching hard disks format.

But there's a better way, and it's not a robot arm to slog disks in and out of the A: drive.

The solution is automated software distribution — network administration tools that can install new applications and update existing software quickly, with a minimum of human intervention.

But the lack of desktop management tools and inconsistencies among software installation procedures has made it difficult to develop tools that work with a broad range of software.

Despite the difficulties, there is pent-up demand for software distribution tools for PC LANs, which has prompted several leading software publishers to embark on software distribution projects. Microsoft Corp., for instance, will incorporate software distribution into its forthcoming network management application, Hermes. Hewlett-Packard Co., in the meantime, has announced that LAN-based software distribution will be available with HP OpenView, an integrated network administration package. And Novell Inc., through last year's acquisition of software distribution tool maker Annatek Systems Inc., is also well positioned to jump into this market.

A BETTER WAY. Manually installing software is labor intensive and expensive. Support costs can exceed the price of an application by as much as 10 percent, according to studies by the Gartner Group, a Stamford, Conn., market research group.

Technicians updating typical word processing programs can spend as much as an hour on each workstation. The support costs can quickly mount in companies with hundreds or thousands of users.

Despite the obvious need, IS managers have been hesitant to purchase software distribution tools. "Users are gun-shy," asserts Allen Falcon, president of Net-

Source, a Boston-based systems integrator. Automated software distribution (ASD) is new to the LAN environment, he adds, and early horror stories have made IS professionals wary of the product category.

Vendors have had a hard time defining ASD tools, says Jim McConnell, vice president of Infonetics Research in Boulder, Colo. Early products distributed copies of software but didn't install or configure programs, he says. That has led to some confusion among network managers, who already have their hands full just keeping their networks running.

COMPLEX UNDERSTANDING. Why is it so hard to build a tool to install software? The answer: What seems like a simple task is actually quite complex. Practically every program has different installation and configuration routines. Setup information (such as default directories and file extensions) is stored in JNl files for some programs, in CFG files for others, and sometimes in the executable itself. There's no easy, universal way to look at an application and determine its current settings or instruct it to select new configuration options. Some programs create dozens of subdirectories; others need just one. Communications programs may need a driver present before they will operate; database programs sometimes require a larger FILES= statement in the CONFIG.SYS. The list goes on and on.

And the problem isn't just with the applications: "compatible" systems are often set up differently, with different video cards and network adapters that use different addresses or interrupts from ma-



PAMELA ORR/INFONETICS

chine to machine. These differences can freeze an application if it is not configured properly. Yet there's no easy way for an ASD tool to take inventory of a machine and its capabilities. Even if there were, there would be no way for it to modify an application's configuration information unless it was specifically set up for that application.

It's all part of the network administration equation. Without control of the desktop and standardized applications, it's impossible to build universal software installers that can remotely download an application and configure it appropriately for the user. Software vendors need to design software with administration features built in, McConnell says.

WHAT DOES WORK. Automated software distribution can work, however, with specific applications in reasonably well-controlled environments. Although it might be better called semiautomatic software distribution, companies are reducing the time needed for major upgrades. However, this requires a fair amount of planning and preparation by the information systems department. For example, ASD has worked well for the Prudential Select Marketing Co., in Minneapolis. According to network specialist Ray Ehrlich, automatic updates of NetWare shells and drivers as well as remote edits of CON.FIG.SYS and AUTOEXEC.BAT files are making life easier for the network staff.

Ehrlich is using a product called SUDS (Software Update and Distribution System) from Frye Computer Systems Inc., in Boston. SUDS can assist installation by copying files to attached PCs or by using keyboard macros to run an application's installation routine. Ehrlich plans to use SUDS to update system files on about 450 PCs throughout his company. However, Ehrlich cautions that SUDS

is only appropriate in environments where the desktop machines are limited to a few particular configurations, such as 4MB PCs with VGA cards and Ethernet adapters running DOS 5.0. SUDS includes system "sniffing" capabilities to assess the hardware of the target machine. The administrator uses the application's setup routine to install the software using the configuration information of the target machine. SUDS then copies the installed application to target machines that are configured similarly to the original. Of course, the administrator can also limit distribution to users or groups.

PRESS ANY KEY . . . The alternative is to run the application's own installer on each target machine, using a file server as a source for the installation files and keyboard macros to answer setup program questions. This can take a considerable amount of work, as the administrator may need to write a fairly sophisticated set of instructions to accommodate the installer.

For example, the installer may ask the user about the video card and issue a prompt for a driver diskette. The administrator's routine needs to capture that query, determine the correct answer, and redirect the setup routine to a directory containing the drivers on the server.

Obviously, it takes time to set up this type of installation; this approach is best for large installations where hundreds of users need to be updated.

No matter which technique you use, you need to use appropriate safeguards to ensure the process can be undone if the installation fails. Even a small percentage of aborted installs can tie up a support team if there's no quick way to restore end-user systems to their previous state while the problem is being resolved. Lack of "uninstall" functions in commercial software is a major complaint of users, notes Russell Frye, president of Frye Computer Systems.

Much work needs to be done before truly automated software distribution can become a reality in LAN environments.

Software distribution will not really take off until application developers include standardized installation routines that can be easily controlled by other programs. At the very least, programmers need to base their setup programs on a universal system information file that can be modified by system administrators. This may be on the way, for future Windows applications, anyway. The next edition of Microsoft's software development kit for Windows will include "tools and suggestions" that will encourage developers to adopt standardized installation routines, says Ruth Warren, a senior product manager for corporate and network system at Microsoft.

With the amount of time spent installing and updating files, it's clear there's a need for better tools, says Infonetics' Jim McConnell. "It's going to be a huge market for anyone who breaks through." □

Software distribution products

Vendor	Product	Availability	Pricing
Microsoft Corp. Redmond, WA (206) 882-8000	"Hermes"	Fall 1993	Unavailable
Frye Computer Systems Inc. Boston, MA (617) 451-5400	SUDS	Shipping	\$995
Hewlett-Packard Co. Cupertino, CA (800) 637-7740	HP OpenView Software Distributor	August 1993	\$4,400 - \$42,700
Novell Inc. Boulder, CO (800) 821-0528	Network Navigator	Shipping	\$200 per client

Case Study

Ladies and gentlemen, start your microprocessors

Indianapolis 500 racing team makes innovative use of off-the-shelf PC technology

BY PATRICK LYONS
AND HELDER ANTUNES

If you want to see an example of high-performance computing, look no further than this past weekend's Indy 500 race. Today's racing teams are using the latest desktop and mobile computing technologies to wring every bit of performance from their cars and drivers.

This is no Sunday drive. The need to process information effectively is no less important for racing teams than it is for corporate America. At stake are personal reputations and millions of dollars in sponsorships. The right information can mean the difference between winning a race and blowing an engine, or possibly even crashing.

Of course, computers aren't new to automobiles in general or race cars in particular. Computerized engine controls and computer-aided design programs have been used by builders of racing and street cars for years. What's new is the integration of these technologies with extensive real-time data acquisition and modeling. Laptops and LANs are providing today's racing teams with insights into their cars' behaviors and the ability to make on-the-fly adjustments.

In fact, racing teams are loading up on the same hardware and software found in the office to optimize their cars and drivers. PCs and laptops, combined with extensive databases of performance statistics, are helping to spot trends and optimize how a car will perform in a given environment.

The racer's adage that there's no substitute for horsepower still holds true, of course, but optimizations that once took days of trial and error and no small amount of intuition can now be calculated instantly with PCs. Engine performance data from previous races, for example, can be combined with optimum speeds calculated for a particular course to generate the best set of gear ratios for the transmission.

SPED DEMONS. Making cars faster, of course, is what it's all about. "In the racing business, winning is your only goal," explains John Fairve, an electronics engineer with the Marlboro Penske racing team. "We use all this computer information to learn more about the performance of the car," he adds.

Fairve has been applying information technology to race cars since 1986, when he worked for a team sponsored by consumer electronics giant Emerson Electric Inc. At that time, he was asked to design a real-time data acquisition system to gather and relay data from the car to the pit crew and engineers during a race.

His current system continues to use a radio transmitter installed in the car to capture data from the engine's sensors and send it back to radio receiver-equipped notebook computers in the pits. Outfitted with more than 3MB of RAM,



Laptops put Penske on winning edge

WHO: John Fairve

WHAT: Electronics engineer

WHERE: Marlboro Penske racing team, Reading, Pa.

PROBLEM: Capturing and analyzing a broad range of environmental and operational data from formula race cars.

SOLUTION: A "black box" telemetry system attached to the engine feeds real-time information to laptops running off-the-shelf applications, such as Lotus 1-2-3 and Microsoft Excel. A PC database stores historical data for future analysis by the race team.

MOST SURPRISING LESSON LEARNED: With each race or practice generating more than 3MB of data, the project is generating more information than can be analyzed.

QUOTE: "Investing in PC technology wasn't really a business decision - in the racing business, winning is your only goal."

the "black box" monitors up to 75 different conditions, ranging from engine revolutions per minute, oil pressure, and turbo boost to suspension travel and fuel consumption.

"We use the telemetry data during the race to determine how much fuel is on board and how fast we are using it and to make sure there are no unsafe conditions developing in the car," Fairve says.

A key feature is the ability to reprogram the car's computers to alert the team and drivers of the conditions critical to a race. Unlike with traditional engine monitoring systems, Fairve can set thresholds as he wishes and use the computer to help him keep an eye on particularly critical areas, which may change from race to race. It's a system that actually has more in common with stock trading and factory automation software than engine controls.

NOT THE END OF THE ROAD. After the race, the vital statistics are uploaded to a file server in a support van. The server has a 680MB optical drive with data from oth-

er races and events, which gives Fairve and the rest of the team historical context to evaluate the data against.

Marlboro Penske has four engineers who spend hours analyzing the data after every race or practice session looking for clues or trends to maximize performance. After a typical practice, the engineers (two are responsible for the electronics and the other two take care of the chassis) review the data with the driver, the team manager, and the chief designer. "We probably spend 2 hours looking at data from only 30 minutes of racing," Fairve says.

Although the engineers analyze most of the data after a race, some of it is used by the driver on the course. A dashboard-mounted LCD shows much of the telemetry data and has programmable alarms to alert the driver to critical conditions. The driver can also use the system to make minor adjustments, such as the amount of turbo boost, using the readout as a guide.

With a total annual budget of just \$15 million to \$20 million and engines that

can cost as much as \$100,000 to rebuild, Fairve does not have a lot of money to throw at systems or custom applications. Off-the-shelf software is used wherever possible. For example, Microsoft Excel and Lotus 1-2-3 are used to determine gear ratios, and Symantec's Q&A keeps track of the parts inventory.

FAST TRACK. By far, the most impressive part of the system is the "black box" that resides in the car and monitors engine functions. It includes 3/4MB of RAM and an analog-to-digital converter and can store the data it captures or transmit it back to the pit.

The black box is critical to the operation, Fairve says. "If the system fails we have to resort to estimating pit stops, the driver has to shift by ear, and he can't adjust the boost because he doesn't know what the current setting is."

In fact, the systems can actually do too much. Recent changes to the rules governing Indy-style cars now prohibit computerized functions such as traction control, automatic transmissions, or active suspensions (which replace conventional shock absorbers with computerized dampers that can help a car corner faster). In other races, such restrictions do not apply and the team constantly adjusts the car for each section of the track. The system does not diminish the driver's role in any way, according to Fairve.

Keeping drivers happy, of course, is an important goal for the team. And Fairve's data capture and analysis system seems to be doing a good job of that, as well.

"I believe the electronic aspect of the car is very important," says Emerson Fitzpatrick, one of Marlboro Penske's drivers. Fitzpatrick notes that one of the most important benefits of the system may be one that was never part of the design.

"It keeps the driver honest about his performance," he says. "If the driver exaggerates his account of what transpired on the track, the team engineer can easily dispute it."

Is the system paying off? Fairve thinks so, but luck also plays a big role in racing. "We're still gathering more information than we can digest," he says. In the future, the Marlboro Penske racing team will apply even more analysis to the data that will help the team eke out that last measure of performance.

Fairve, Fitzpatrick, and the rest of the Marlboro Penske crew have proven to be a world-class operation, and their record speaks for them. Incorporating high technology and on-board computers into formula racing has had a dramatic effect on the performance level of the cars and on the safety record of Indy racing. □

Patrick Lyons is a technical analyst in the InfoWorld Test Center. Helder Antunes is a professional race car driver.

Down to the Wire / Nicholas Petreley, Nancy Durlester, Laura Wonnacott

Enterprise Team ponders network utopia and ill-mannered packets

Now that our TCP/IP comparison is history, we can turn our attention to a project we've had simmering on the back burner. We're exploring ways to increase internetwork performance. The latest item on our list is the Artel StarBridge Turbo, which offers a semi-intelligent way of sorting network packets among multiple servers.

A VISIT TO UTOPIA. The benefits and difficulties of bridges, routers, and intelligent switches tend to get lost in all the hoopla surrounding network operating systems (NOSes). Take for instance the media attention recently lavished on Microsoft Corp.'s Windows NT and Novell Inc.'s NetWare 4.0. While a speedy and robust NOS is an important factor in a corporate information architecture, it's not the only factor in the complex performance equation.

This oversight tripped up a sales pitch we witnessed some time ago. A well-intentioned Univel Inc. spokesperson was trying to convince us that UnixWare is a superior network alternative to Windows NT. He argued the benefits of the NetWare/UnixWare synergy. NetWare has the fastest file and print services on the market, the salesman said. "I'm sure you've noticed that you can access server-based data faster than your workstation's own hard disk."

You could see the IS managers in the audience squirming in their seats, wondering what kind of network utopia this guy was talking about. Maybe you can tip the scales in a lab, but there's a lot more to performance on a real network than how fast the NOS can pull data out of a cache. There's the wiring, network cards, and traffic bottlenecks, to name just three additional factors.

Ideally, you can minimize bottlenecks if you have an unlimited budget and my-



tical knowledge of future needs. But if your network is ever growing, as ours is, it's not always that simple. Like many of you, we started small and expanded as budget, space, and business allowed.

We've found that dividing the corporate LAN into segments helps minimize bottlenecks that result from rapid growth. And the Artel StarBridge Turbo might be just the device we need to eliminate some of the kinks that result from unforseen growth spurts.

Here's a simplified description of our internetwork: We occupy three floors of an eight-story building. Each floor has a wiring closet where all workstation connections terminate into a wiring concentrator. A single line from each floor terminates in our systems department, housing three NetWare servers.

Back when we installed these servers, we contracted out to a tank of creative geniuses who, after a marathon brain-storming session, came up with the names IW1, IW2, and IW3.

A line from each floor is connected to a network interface card (NIC) in that floor's dedicated server. We added a NIC to each server and connected these three

additional cards to one another via a local concentrator, constituting our backbone.

RUDE AWAKENING. So let's look at how these servers and workstations converse, so far. You have these three servers standing around chatting over cocktails. Right now, IW1 is getting nowhere trying to make sense of a conversation between IW2 and IW3 about polymorphism in object-oriented programming. Along comes this IW1 user with a confidential question for IW3. He's not on direct speaking terms with IW3, so he whispers it in IW1's ear and asks him to pass it on. IW1 then announces the question right in the middle of an exchange between IW2 and IW3 about multiple inheritance. IW2 mutters, "How rude," and ignores the question. To make matters worse, IW3 then shouts the answer back to IW1, once again right in front of IW2, who bristles at the breach of etiquette. IW1 then announces the answer to the IW1 user and all his pals.

Obviously, this is not only offensive to Miss Manners, it is an inefficient way to communicate. Messages have to be passed from one server to the next, and one or more servers are getting bothered with info they don't need.

One method of sorting out a conversation like this is segmentation, and that's where the Artel bridge comes in. Artel's StarBridge is a high-speed switching hub designed to increase network performance by passing information to its destination without the other machines having to be in on the conversation. In our cocktail party, it would let our IW1 user talk directly to IW3 without bothering IW1 or IW2.

The StarBridge doesn't stop there. Artel's big claim to fame is its capability to check each incoming packet, forward-

ing the good ones and discarding the bad.

PLUG AND PRAY. The first thing we do to test the bridge is install it in our production network. Artel promises ease of installation, so we figure we'll be able to take down the network one evening for about an hour, install the bridge, and presto — back in business.

We plot our strategy carefully. We plug the wires from the concentrator that connects our three servers together, then we plug them into the Artel bridge. Then we unplug from the three servers the wires coming from the different floors, and plug them into the bridge. So far, we're taking minutes. Each server is left with one unused network interface card, so we want to remove those cards. We'll have to edit the NetWare startup files to remove the protocol bindings for these cards. Plug and play? Well, maybe not technically, but why quibble. Add a half hour.

The Artel box, like other products of this type, makes everything on the same network segment. So a little more start-up file editing is in order to reset the servers' network numbers to be the same. We wonder about the repercussions that changing network numbers might have on the rest of the *InfoWorld* internetwork.

It's beginning to sound like plug and play means plug it in and play with it until it works.

Are we having fun yet? Stay tuned. Next week, we'll show you just how much playtime we're devoting to our new toy.

Down to the Wire chronicles the ongoing adventures and misadventures of our *InfoWorld* IS task force, the Enterprise Team. E-mail can be sent via the Internet to nicholas.petreley@infoworld.com.



Help Desk / Brett Glass

Parking your head is a safe way to prevent hard drive damage

Our office uses Zenith SlimSport 286 laptops with Conner 20MB hard drives. Users are prone to park their heads when they're turned off. This article went out to say that repeated use of a park utility could damage a drive. Is use of SHIP.COM shortening our laptops' life?

Eric Russel
Ford Foundation, Nairobi

A The answer depends on the parking utility. Steve Gibson, our resident hard disk reliability expert, says that there once were some parking utilities that attempted to move the drive heads too far inward, potentially hurting the drive. But there's never any harm in using a properly written utility — one that moves the heads to the innermost cylinder and does not try to go farther. I recommend that your employees continue to park the heads before traveling.

If we move 100 percent to Windows applications, is there any reason for us to use a memory manager, such as QEMM? When we're using Windows, does it matter if we load device drivers and TSRs high? Is expanded memory ever necessary?

Randall Cone

If you're working in an absolutely 100 percent "Windows-only" environment, you may not need to use a memory manager other than HIMEM.SYS. Windows applications won't care if you clutter up conventional memory with TSRs, as they are not restricted to running there. And expanded memory is not necessary, as Windows doesn't need it and allocates expanded memory for DOS sessions itself.

But a memory manager can be a lifesaver if you fall back on DOS for tasks that must execute reliably, use DOS utilities to tap the full power of your computer without Windows' overhead, use Windows as a multitasker for DOS programs, or run any memory-intensive DOS program inside or outside Windows. Each byte you save in conventional memory is multiplied by the number of

DOS sessions, and memory manager vendors are readying utilities that can give you as much as 720KB or 736KB of conventional memory in a DOS session. Finally, certain maintenance tasks that are best done outside DOS (such as defragmenting and surface testing) can use the extra conventional memory provided by a memory manager.

What's the best way to add more disk space to a machine with a run length limited (RLL) drive without throwing away the original drive?

Don Kava

Get a SCSI hard disk and SCSI host adapter card to supplement your current drive. SCSI drives, although slightly more expensive than integrated drive electronics (IDE) drives, will coexist with any other type of drive. And you can add up to seven SCSI devices per host adapter card, so you won't run into trouble if you want to expand further.

I have noted the high quality of *InfoWorld*'s Windows screen pictures. I often need to make hard copies of Windows screens as well, but I have found

that the quality of the output on Hewlett-Packard LaserJet IIISi is less than ideal. How can I import screens into to Word for Windows and other programs so that they print well?

Gerry Grimm

According to *InfoWorld* art director Ben Barbante, a wide variety of screen-capture programs are used to convert Windows screens to PCX, TIFF, and encapsulated PostScript files. The captured screens are then imported into Quark-XPress. Chances are *InfoWorld*'s screen shots look better than yours mainly because we print the screens in color and at high resolution.

You may be able to improve the quality of the screen images produced by your LaserJet IIISi by using Windows' Control Panel to create a black-and-white color scheme.

Brett Glass' Help Desk answers readers' business computing questions. Brett cannot answer questions by personally. Readers can leave questions by calling (800) 227-8365, Ext. 702, or by messaging ComputerServe (72267,3673) or on the Internet at brett_glass@infoworld.com.



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Civilized Computing / Cheryl Currid

To Little IS Bo Peeps: flock to the '90s techno revolution

I am seeing far too many corporate IS managers looking like lost little lambs in glass houses. Some are still licking

their wounds wanting and wishing for a single technology leader to tell them what to do and when to do it. To them, I say it's time to grow up — stop making excuses, get over it, and get going.

One debilitating factor facing more than a few IS shops is simply senior IS management's lack of education. CIOs, directors, and managers don't have a clue when it comes to dealing with networking options, "open systems," and multivendor technology.

After all, lots of old, lots of IS managers never had to know too much. All they had to do was listen to their IBM marketing representative, memorize a few three-syllable company delay unsponsored projects with talk about the next "statement of direction," and sit together their budgets for the next mainframe upgrade. It was a pretty predictable job. The IS manager was in complete control and could (and often did) say "no" at will.

Things are different now. Senior corporate managers have gotten a lot more savvy about computing; corporate users are ready, willing, and able to make decisions for themselves; and no single technology vendor rules the corporate computing world. IS managers who don't hurry up and start dealing with the new



The Network Curmudgeon / David Strom

In the fourth era of communications, we have good choices

It seems we are at another watershed moment in the 3270 communications business, as highlighted by Novell Inc.'s recent sale of its 3270 client software to Attachmate Corp. This is good news, because it represents the maturing of client/server products after long being hyped by vendors and the press alike. Let me explain.

The first era of 3270 communications was when we had 3270 terminals connected via coax. This era is still with us, and there are even some corporate customers still buying these beasts: The price is right (ultra cheap), they never break, and they are easy to configure. They are just a bear to use, although there are some people who still like to use character-mode screens in their jobs. (Hey, look at me: I'm using character-mode software to write this column, even though I run Windows and Word for Windows.)

OK, for most people this first era ended in the mid-1980s. In the second era, people used PCs with the Irmia board from Digital Communications Associates Inc. (DCA). We still had lots of coax, and we still had the same character displays, but now we could switch between the 3270 session (which was supported via DCA's software) and the PC DOS session. Of course, we could not cut and paste text between the mainframe and PC files, but at least we didn't have two devices on our desks or have to log off

reality simply won't last long. Even if one is knocking at the door of the "glass house" demanding new things today — someone soon will.

Therein lies the problem. Many IS shops are pitifully ill-prepared for that knock on the door. I can't believe the number of companies that still don't have effective LAN-to-WAN strategies, effective E-mail, or electronic ordering systems. This is 1993, yet I've recently seen some business procedures that made me feel as if I had taken a wrong turn and landed back in 1893. Grow up — net-

business gets anything right. Its employees log every transaction by hand. Sure the information eventually ends up in a computer, but only after being handled by six to eight pairs of hands.

It gets worse. This same company has still to discover E-mail. Despite the fact that it operates globally, this company simply hasn't gotten its E-mail act together. Nobody has taken the charter or charge to implement a sorely needed way of gluing the company's talented people together. No, no, the business people have to communicate by phone and fax

Therein lies the problem. Many IS shops are pitifully ill-prepared for that knock on the door.

works and open systems are no longer bleeding-edge technology.

It's time to replace or re-engineer business processes and old systems. Besides, nobody awards grants to organizations that keep legacy systems around. What you might get instead is a pink slip when people figure out what they are missing.

Take one company — which I will spare the embarrassment of mentioning by name. This major (really big) buyer and seller of consumable goods is still doing so with paper, pencils, five-part forms, and pick tickets. It is amazing this

and hope to keep their telephone tag down to 20 percent of productive time. Can you imagine the lost opportunity for white collar workers who spend upwards of 8 to 10 hours a week chasing each other around on telephone calls?

Recently the top management committee, fresh from reading articles in *The Wall Street Journal*, *BusinessWeek*, and assorted airline monthly magazines, decided to call in a consultant to evaluate the company's technology. These executives were mad — real mad because they felt they had fallen behind.

the mainframe just to run a spreadsheet.

The third era came about late in the 1980s when LANs came into their own. This saw the replacement of coax with Token Ring or Ethernet cabling and the use of 3270 LAN gateways, where one PC acted as a 3174 cluster controller and the other PCs ran some kind of client software to talk to it.

This wasn't quite client/server computing yet: These products usually required specific protocols and client software to work, took forever to install, and re-

dors involved support all your choices. For example, most of the client-side pieces can now work with gateways offered by Novell Inc. and DCA just fine, in addition to their own.

So what happened? Manufacturers are beginning to decide on which side of the fence they want to sell products: either the client or the server side. Take Novell, for example. A few weeks ago, Novell decided to get out of the client-side 3270 business and stick with the server side. Novell sells NetWare for Systems Application Architecture (SAA) server software, which is a series of NetWare Loadable Modules that run on a NetWare server. The company decided to sell its line of client products (which it had acquired from CXI) to Attachmate, which has its own line of 3270 products, including some clients that can talk to the NetWare for SAA server.

This was a good move, not just because Novell has 80 percent of the 3270 server business, but because it focuses the company in the places where it does the best, selling its 3270 servers alongside other kinds of servers. As for Attachmate, it now has two distinct lines of client-side software and can bolster its own market share. A win for both sides.

Besides Novell, at least two other server-side products in the 3270 communications world make use of client/server technology: DCA/Microsoft Corp.'s Select Communications Server and IBM's Communications Manager. Both run on OS/2. Microsoft wants to move

Manufacturers are deciding on which side to sell products: client or server.

quired lots of people skills on both the mainframe and PC LAN side.

No anymore. Today we are fully into the fourth era of 3270 communications, what we pundits call the client/server scene. Now you can pick your client (a piece of software that contains a 3270 emulator that runs in a variety of configurations, including some nice Windows versions), pick your server, and hook them together. This is what makes client/server applications appealing: the freedom of choice, provided all the ven-

you see, the top IS manager of this enterprise is a little sheepish about installing new technology. He is simply afraid of his own shadow and frequently runs back to his office at the first sign of talk about technology he doesn't know.

He's full of excuses. First he'll tell you his company doesn't have more advanced technology because corporate management is uninterested in technology's value; he can't install what they won't pay for. Then, if you ask a few more questions, he'll tell you why multi-vendor networking technology won't work for his organization. Headed up this list are concerns about security, reliability, scalability, and availability. Next try to tell all these can be countered with a few facts and a well-configured network — when you know your tools and technologies.

The problem with this lost lamb (and others) is he just doesn't know, and he assumes things won't work. That stance is a shaky one — especially if somebody comes along with a solution that works when the IS manager says it won't.

Today's IS managers need to run, not walk, into programs that teach them something about the capabilities of new technology. It's time to get out of the glass house before somebody comes along and shatters it.

Cheryl Currid, president of Houston-based Currid & Co., focuses on helping clients assess, apply, and organize for new information technology. Her CompuServe address is: 75300,2660.

the product over to NT, but until NT is actually nailed down, it still has to live with OS/2, IBM's Communications Manager used to be part of Extended Edition but is now a separate product and perhaps one of the more compelling reasons for using OS/2 in corporate America.

There are lots of client-side pieces as well: Wall Data, Attachmate, IBM (with multiple products), DCA (with multiple products, including two lines of Macintosh emulators), and several other companies.

So why is this a watershed event? Mainly because you can now pick your partner. A few years ago we were still arguing over which version of HLLAPI (the interface that allows PC software to scrap the 3270 screen and put that information into a PC program or move stuff from the PC up to the mainframe automatically) functions were supported by which version of 3270 emulator software. Thankfully, we are out of that business. A few years ago, you couldn't get two different DCA products to talk to each other. Now they share some common code and features.

And now it seems that companies are taking sides between selling clients and selling servers, and I'm glad to see it.

David Strom is president of his own consulting firm, in Port Washington, N.Y. He can be reached via MC1 Mail at strom/3193660 or via the Internet at strom@radiomail.net.

A dense collage of numerous INFO WORLD REPRINT newspaper clippings from the early 1990s. The clippings are overlapping and oriented at various angles, creating a textured, layered effect. The headlines and snippets of text are mostly illegible due to the density and angle of the arrangement. Some visible text includes:

- "INFO WORLD REPRINT" repeated multiple times across the collage.
- "REVIEW / PRODUCT COMPARISON" appearing as a section header.
- "INFO WORLD NEWS/NET" and "INFO WORLD NETWORKING" sections.
- Headlines like "The Executive Forum Reports Into Area", "Compaq Pares 486SX/25 handheld", "Microdyne S Promises better remote", "Microsoft's Fox Purchases up the XBase Market", and "Norton Back-up Software Rates High Scores".
- Reviews for products like "NetRunn", "P224/MV", and "Windows 3.1".
- Technical terms and concepts mentioned include "EIS", "Pro/17", "script interpreter", "Xerox 5775", "TCP/IP", "NetWare", "Windows", "XBase", and "Norton's pAnywhere".

The overall theme is the coverage of personal computing, networking, and software development during the mid-1990s.

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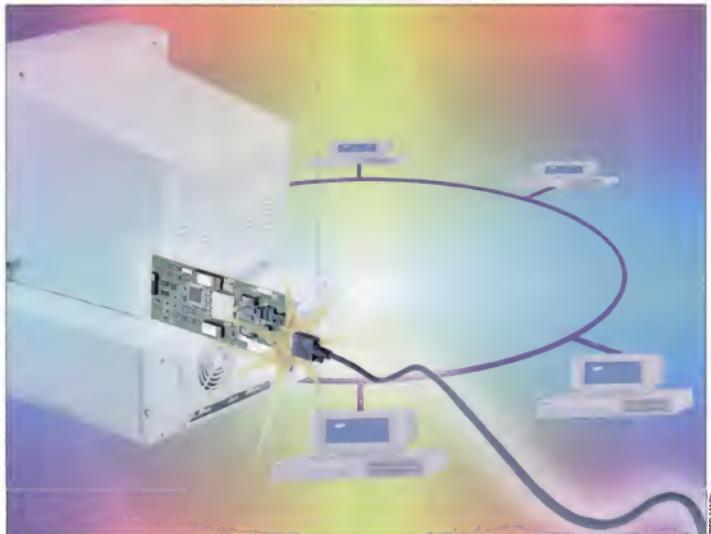


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REVIEWS / PRODUCT COMPARISON



FRED MACK

16-bit 10Base-T workstation NICs

InfoWorld puts 13 network interface cards for clients through their paces

INTRODUCTION BY **PAUL FERRILL**
REVIEW BOARD

TEST DEVELOPMENT BY **TIM CRAWFORD**
AND **RODERICK CHAPIN**

TESTING BY **RODERICK CHAPIN**
AND **JEFF VAN CURA**

EDITED BY **CHERYL GOLDBERG**

With the popularity of networks on the rise, network interface cards (NICs) are getting increasing attention from the general computing public. In our April 19 issue (page 80), we tested 12 32-bit Ethernet 10Base-T NICs for use in servers. This time we look at 13 10Base-T workstation cards from Ansel Communications, Cabletron Systems Inc., CNet Technology Inc., D-Link Systems Inc., Eagle Technology, Hewlett-Packard Co., IBM, Intel Corp., NetWorth Inc., Racal-Interlan Inc., Standard Microsystems Corp., Thomas-Conrad Corp., and 3Com Corp.

In our June 28 issue, we will review 14 Token Ring cards from Action Technology Corp., Andrew Corp., Cabletron, CNet, Eagle, IBM, Madge Networks Inc., NetWorth, Oicom USA Inc., Proteon Inc., Racal-Interlan, SMC, Thomas-Conrad, and 3Com.

THE MARKET. Ethernet currently claims the lion's share of the network topology market. Fifty-six percent of networked PCs use Ethernet, according to a study by International Data Corp., and the use of Ethernet is increasing faster than the growth of its chief competitor, Token Ring. The same survey shows 10Base-T (the standard for unshielded twisted-pair Ethernet used in combination with a central wiring bus) as the Ethernet wiring scheme of choice, and that's what we have reviewed.

Beyond network topology, your choice of NICs depends on price, performance, ease of installation, and support.

PERFORMANCE. The 16-bit ISA cards tested here all offered comparable performance: The Ethernet NICs varied by just 3 percent. Performance of the cards is close in part because the differences between the chip sets used to implement a NIC have shrunk as NICs have become a commodity. The other major contributor to performance, the software driver layer, is also becoming quite uniform because major vendors such as Intel have taken on the burden of writing high-performance drivers. Most NICs are compatible with drivers written either for the Eagle NE3200 or the SMC Elite. For the same reasons, workstation Ethernet

NICs are grouped closely in price.

INSTALLATION. Each NIC comes from the factory with default settings designed to avoid interfering with the most commonly used interrupts and I/O addresses for non-network devices. Unfortunately, systems equipped with a slew of other peripherals may end up in a conflict despite this practice.

Diagnostic utilities that reveal which interrupts and I/O address areas are being used (for example, QAPplus, WinSleuth Gold, CheckIt Pro, PC Doctor, or even Manifest) can clarify the potential conflicts, but your job will be easier if your NICs can be configured for a wide range of interrupts and addresses. Be on the lookout for adapters that are configurable using software, eliminating the need to set large banks of jumpers and DIP switches.

Flexibility, Ease of Use. You will want to make sure the card supports your network environment. The features tables in this comparison list the major operating systems each product supports. All of the cards support NetWare 2.x, 3.x, and 4.0 as well as LAN Manager, and with the right software loaded, the NICs can support several network protocols at one time. That's because almost all of the cards

tested included software based on one of two network driver specifications designed to support multiprotocol "stacks": Network Driver Interface Specification (NDIS) or Open Data-Link Interface (ODI). NDIS was devised by 3Com and Microsoft Corp. for the OS/2-based LAN Manager environment, and Novell Inc. released ODI with NetWare 3.0.

The approach Novell used before ODI involved use of the SHGEN utility to build an IPX.COM for each NIC. As a result, administrators often had the confusing and irritating job of supporting a number of IPX configurations. New IPX files had to be built to accommodate the release of a new IPX by Novell or updated driver files from a NIC vendor.

Going with ODI may make sense in a Novell environment, in large part because customization that had to be "hand-coded" into IPX.COM can now be handled by changing the text of a NET.CFG file. You can even use a single NET.CFG file for many different combinations of NIC drivers, protocols, and so on, because only the appropriate sections of NET.CFG are used by NetWare while others are ignored.

Paul Ferrill is an electrical engineer. Cheryl Goldberg is a former editor at PC Magazine.

16-bit Ethernet network interface cards differed mostly in price

Workstation network interface cards (NICs) serve as the interface from the client to the topology that connects to the file server.

Our reader surveys told us to focus on the most common configuration: ISA bus architecture PCs. For this comparison, we chose to look at interface cards that conform to the 10Base-T topology.

We evaluated each group of cards in the comparison using our InfoMark benchmark tests, which use scripts to simulate users running Harvard Freelance Graphics, 1-2-3 for Windows, dBbase IV, Word for Windows, and cc:Mail on a Novell network. The suite generates realistic network file and print traffic across the network to the file server.

HARDWARE CONFIGURATION:

To test the performance of workstation NICs as accurately as possible, we used high-performance components in the rest of the network to ensure it was the workstation NIC and not something else in the network that governed the throughput. Therefore, we used a Compaq Systempro 33-MHz 486 machine configured with 16MB of RAM, a 500MB integrated drive electronics (IDE) hard disk drive, and one Compaq NetFlex 32-bit EISA Ethernet NIC.

We attached five systems to the Sys-tempro server: one Dell 25-MHz 486, one Dell 33-MHz 386, one Compaq 20-MHz 386SX, and two AST 286-12 Bra-vo systems. We connected each of these workstation systems and an additional AST 286-12 system used for administration to the hub/Multistation Access Unit (MAU) using unshielded twisted-pair (UTP) cabling. We used

Executive summary

The 16-bit ISA 10Base-T workstation network interface cards we evaluated offer comparable performance. All completed our benchmark tests in times that varied by just 3 percent. Most were mid- or slot-length boards, which take up less slot space and are easier to install than full length boards; most were well constructed with modern surface-mount technology and no patches. These boards offered a great deal of flexibility in their I/O setting and interrupt support, and all were fully compatible with our test systems. Most offered excellent support policies, but Hewlett-Packard Co. offers support through dealers only.

The cards differed most in their installation procedures, documentation, price, and support.

The Intel EtherExpress FlashCache LAN Adapter card got our highest score, stands out for its setup procedures. To install the card in a single machine on a small network, you run a software installation program that automatically configures the card and loads self-configuring Internetwork Packet Ex-



Cabletron concentrators with the hub/MAU.

All of the clients and the hub/MAU connected to the server on the same segment or ring.

SOFTWARE CONFIGURATION:

We ran our InfoMark benchmark tests under Novell Inc.'s NetWare 3.11, installing the tests under a "master" server to ensure consistency across all the benchmark iterations. We used the default configuration for the server, with no optimizations. Each of the topologies ran at the default packet size as defined by NetWare.

SPEED:

We ran our test suite twice in two configurations — one client and five clients — and averaged the results. We compared the data and found a variance of less than 3 percent.

COMPATIBILITY:

In this category we tested how well each of the NICs worked in the range of clients in our test bed. Products that worked the first time without any problems received a high score. We lowered the score if we encountered any problems.

FLEXIBILITY:

To test flexibility, we noted the capability of each card to support a variety of interrupts and address settings. A card that supported 10 or more settings received a score of excellent. Cards that supported

change (IPX) drivers. For larger networks, you can load drivers onto the server, then automatically download them to each workstation. Another utility lets you update drivers automatically from the server as necessary.

At \$99, CN600E is priced considerably less than any other card. However, with 22 jumpers and an 8-switch DIP switch, it was more difficult to set up than most of the other NICs except for Racal-Interlan Inc.'s. In addition, it is the only card that lacked surface-mount technology.

Thomas-Conrad TC5143-T Ethernet Adapter garnered high scores in most categories, but it offered no automatic setup features. IBM LAN Adapter for Ethernet was the second lowest priced (\$155) but scored highly in most categories. SMC EtherCard Plus Elite16 offered superior compatibility, flexibility, board design, documentation, and support policies, but it is somewhat more expensive than the IBM and Thomas-Conrad cards. NetWare UTP16B 10Base-T Interface Card is reasonably priced and offers excellent compatibility, flexibility, design, and support.

Engle NE2000 Plus 3 is a strong product, with excellent and very good scores in all categories, but it is more expensive (\$299) than some of the comparable

seven to nine settings received a very good; five to six a good; four a satisfactory; and three a poor score.

DOCUMENTATION:

The documentation should provide comprehensive technical information for the NIC and help you access this information quickly and easily.

We looked for extras such as illustrations, quick-start cards, and basic troubleshooting tips.

Comprehensive, well-organized, and well-written manuals received the highest scores. We lowered the score if the manual was poorly organized, lacked both a table of contents and index, did not include information on installing options, or if there were factual errors in the text.

SETUP:

In this category, we based our scores on how easy it was to install the software and device drivers.

The more automated the setup, the higher the score. We awarded the highest scores to cards that offered software setup routines that could automatically detect the interrupts and I/O settings in use on the card, and that came with pre-generated auto-configuring Internetwork Packet Exchange drivers.

Cards with one of these automated features received a score of very good. We awarded a good score to cards that were mostly software configurable but had no auto-configuring features. Cards that required us to manually set numerous jumpers received satisfactory scores.

BOARD DESIGN:

To score this category, we examined the quality of the card's construction. We downgraded cards with patches or repairs and awarded higher scores for newer, more reliable production techniques,

such as surface-mount technology. The better the overall construction, the better the score.

SUPPORT POLICIES:

A one-year warranty covering parts and labor and unlimited (but not necessarily toll-free) technical support from the vendor earned a satisfactory score.

We awarded bonuses for unconditional money-back guarantees; on-site service included in the purchase price; extended support hours; bulletin board (e.g., CompuServe) support; and a toll-free number.

We subtracted points for no technical support, a limited support period, or dealer-only support.

TECHNICAL SUPPORT:

To score technical support, we made three anonymous support calls to the vendor for each product. Products that had available, knowledgeable technicians willing to offer extra help received the highest scores. For example, we awarded extra points if the technician volunteered to send us the latest drivers.

Technicians who lacked knowledge, a long time spent on hold, or waiting for calls back lowered the score.

PRICE:

We scored price mathematically. The lowest priced unit received the full possible points (200). All other systems received a percentage of the total points, which we calculated by dividing the lowest price by higher prices and multiplying by 200.

We scored on list price only (street price will vary with the number of units you buy, your contract with your dealer, and other factors).

THE SCORES

Intel EtherEngine FlashCache LAN Adapter	8.6
CMX CM600E	8.4
Thomas-Conrad TC5143-T Ethernet Adapter	8.2
IBM LAN Adapter for Ethernet	8.1
Engle NE2000 Plus 3	8.0
NetWare UTP16B 10Base-T	8.0
SMC EtherCard Plus Elite16	8.0
HP 27247B PC LAN Adapter/16 TP Plus	7.8
Ansel NS2100-3	7.8
3Com EtherLink III 16/8bit Combo	7.7
D-Link DE220CT	7.7
Cabletron E2110	7.4
Racal Inter-Lan NI6510	7.3

products. The HP 27247B PC LAN Adapter/16 TP Plus did well in design features as in price, but it received the lowest score for support policies because the product is supported only by HP dealers. 3Com EtherLink III 16/8bit Combo had the best performance, although its competitors were close behind, but it was more expensive.

Ansel NS2100-3 was priced reasonably but was more difficult to set up and had less elaborate documentation than some other products. D-Link DE220CT, Cabletron E2110, and Racal-Inter-Lan NI6510 were among the most expensive cards. Cabletron was the most expensive by far (\$395) but performed well.

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REPORT CARD

16-bit ISA Ethernet network interface cards

	(InfoWorld weighting)	Ansel NS2100-3	Cabletron E2110	CNet CN600E
Speed	(300)	265.2 minutes; 1 percent slower than 3Com. 295.93	268.2 minutes; 2 percent slower than 3Com. 292.62	266.2 minutes; 2 percent slower than 3Com. 294.82
Compatibility	(25)	Excellent (25)	Excellent (25)	Excellent (25)
Flexibility	(50)	Supports I/O addresses 399, 320, 340, 360; supports interrupts 5, 10, 11, 15.	Supports I/O addresses 220, 280, 300, 380; supports interrupts 2, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.	Supports I/O addresses 200, 220, 240, 280, 2A0, 2C0, 300, 320, 340, 360; supports interrupts 2, 3, 4, 5, 7, 10, 11, 12, 14, 15.
		Very Good (37.50)	Excellent (50)	Excellent (50)
Documentation	(75)	Brief manual covers installation, configuration; includes a simple technical reference; numerous illustrations; manual covers several cards.	Complete; a few plain diagrams; covers several products.	Brief manual covers installation, cabling, troubleshooting, and specs; contains several illustrations.
		Good (46.88)	Good (46.88)	Very Good (56.25)
Setup	(150)	Software configurable; one jumper sets Boot PROM option; you must retrieve NE2100 drivers from Ansel's BBS; WSGEN uses NE2100 drivers to create IPX.COM, not auto-configuring.	Mostly software configurable, one jumper configures I/O, another is for the Boot PROM (if installed); a pregenerated IPX.COM file self-configures for the card.	Configurable via 22 jumpers and an eight-switch DIP switch; we needed to use the manual to set switches to configure the I/O address and optional Boot PROM memory address; other jumper settings were displayed on the board for easy configuration. Satisfactory (75)
		Good (93.75)	Very Good (112.50)	
Board design	(50)	Slot-length board; no patches; semisurface mount; one jumper for Boot PROM option.	Slot-length board; no patches; surface mount.	Midlength; no patches; no surface-mount technology. Good (31.25)
		Excellent (50)	Excellent (50)	
Support policies	(50)	Five-year warranty; toll-free support 24 hours a day, seven days a week; BBS support. Excellent (50)	One-year warranty; toll-free support 8 a.m. to 8 p.m. Eastern time, weekdays; BBS support. Very Good (37.50)	Lifetime warranty; free support from 6 a.m. to 6 p.m. Pacific time, weekdays; BBS support. Very Good (37.50)
Technical support	(100)	Prompt callbacks; knowledgeable and patient.	Reached technical support right away; helpful and patient.	We got through quickly to courteous and knowledgeable technical support personnel. Very Good (75)
		Very Good (75)	Very Good (75)	
Price	(200)	\$179 for a bus-mastering Ethernet card with no RAM; sold through dealers. 110.61	\$395 with 16KB of on-board RAM. Sold direct. 50.13	\$99 with 16KB of on-board RAM; sold through dealers. 200
		7.8	7.4	8.4
Final score				

GUIDE TO REPORT CARD SCORES

InfoWorld reviews only finished, production versions of products, never beta test versions.

Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.

Very Good = 0.75 — Meets all essential criteria and offers significant advantages.

Good = 0.50 — Meets all essential criteria and includes some special features.

Satisfactory = 0.25 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.

Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little.



Ansel Communications is located in San Jose, Calif., and can be reached at (800) 998-2675; (408) 452-5041; fax: (408) 435-0763.



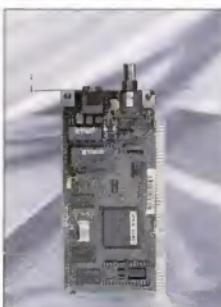
Cabletron Systems Inc. is located in Rochester, N.H., and can be reached at (603) 332-9400; fax: (603) 332-4616.



CNet Technology Inc. is located in San Jose, Calif., and can be reached at (800) 486-2638; (408) 954-8000; fax: (408) 954-8866.

PHOTO BY STEPHEN H. PITT

D-Link DE220CT	Eagle NE2000 Plus 3	HP 27247B PC LAN Adapter/16 TP Plus	IBM LAN Adapter for Ethernet
264.9 minutes; 1 percent slower than 3Com. 296.26	265.9 minutes; 2 percent slower than 3Com. 295.15	265.0 minutes; 1 percent slower than 3Com. 296.15	266.9 minutes; 2 percent slower than 3Com. 294.04
Excellent (25)	Excellent (25)	Excellent (25)	Excellent (25)
Supports I/O addresses 240, 260, 300, and 320; supports interrupts 3, 4, 5, 9, 10, 11, and 15.	Supports I/O addresses 240, 280, 200, 300, 320, 340, and 360; supports interrupts 3, 4, 5, 9, 10, 11, 12, and 15.	Supports I/O addresses 100, 120, 140, 160, 180, 1A0, 1C0, 200, 220, 240, 260, 280, 2A0, 2C0, 300, 320, 340, 360, 380, and 3A0; supports interrupts 3, 4, 5, 6, 7, 9, 10, 11, 12, and 15.	Supports I/O addresses 240, 280, 200, 300, 320, 340, and 360; supports interrupts 3, 4, 5, 7, 9, 10, and 11.
Excellent (50)	Excellent (50)	Excellent (50)	Excellent (50)
Thin manual; nice layout; good illustrations.	Provides in-depth information for setup and specifications for planning your network; refers you to NetWare documentation for software installation; well laid out; nice illustrations.	Thorough; well laid out; includes glossary; refers to READ.ME file for software installation; quick-reference card for installation and configuration.	Brief manual covers installation and configuration; simple troubleshooting guide; few illustrations; undocumented jumper.
Good (46.88)	Very Good (56.25)	Very Good (56.25)	Good (46.88)
Software configurable; comes with a pre-generated IPX.COM file that self-configures for the card.	Software configurable; setup program tells you interrupt and I/O addresses already in use; comes with a pregenerated IPX.COM for default board settings, but not auto-configuring.	Auto-configuring software setup; does not include a pregenerated IPX driver.	NE2000 compatible; software configurable with auto-configure option; setup program would not auto-detect on the AST 286 computers.
Very Good (112.50)	Very Good (112.50)	Very Good (112.50)	Very Good (112.50)
Slot-length board; no patches or jumper wires; semisurface mount.	Slot-length board; no patches or jumper wires; semisurface mount.	Midlength board; no patches or jumper wires; surface-mount technology; a metal shield over the RJ-45 connector reduces interference.	Midlength board; no patches or jumper wires; clean semisurface mount; one undocumented jumper.
Excellent (50)	Excellent (50)	Excellent (50)	Excellent (50)
Five-year warranty; free support 7 a.m. to 6 p.m. Pacific time, weekdays; BBS support. Very Good (37.50)	Five-year warranty; toll-free support 7 a.m. to 4 p.m. Pacific time, weekdays; BBS support. Excellent (50)	Lifetime warranty; free support through dealers. Satisfactory (25)	Five-year warranty; toll-free support 24 hours a day, seven days a week; BBS support. Excellent (50)
Always got right through; all calls answered quickly and with the correct information; friendly and willing to help.	Well-versed technical support solved each of our problems quickly.	Only through dealers.	All calls were answered quickly and competently; the prescreening before we could talk to tech support was redundant, asking many of the same questions as tech support. Good (62.50)
Very Good (75)	Very Good (75)	Satisfactory (50)	Good (62.50)
\$245 with 16KB on-board RAM; sold through dealers. 80.82	\$229 with 16KB on-board RAM; sold through dealers. 86.46	\$159 with 32KB on-board RAM; sold through dealers. 124.53	\$155 with 16KB on-board RAM; sold direct and through dealers. 127.74
7.7	8.0	7.8	8.1



D-Link Systems Inc. is located in Irvine, Calif., and can be reached at (800) 326-1688 or (714) 455-1688; fax: (714) 455-2521.



Eagle Technology is located in San Jose, Calif., and can be reached at (800) 733-2453 or (408) 441-7453; fax: (408) 436-0348



Hewlett-Packard Co.'s Roseville network division is located in Roseville, Calif., and can be reached at (800) 752-0900; fax: (800) 333-1917.



IBM is located in White Plains, N.Y., and can be reached at (800) IBM-CALL; fax: (800) 426-2255.

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REPORT CARD

16-bit ISA Ethernet network interface cards

	(InfoWorld weighting)	Intel EtherExpress FlashLAN Adapter	NetWorth UTP 16B 10Base-T Interface Card	Racal-Interlan NI6150
Speed	(300)	266.8 minutes; 2 percent slower than 3Com. 294.15	266.7 minutes; 2 percent slower than 3Com. 294.26	272.3 minutes; 4 percent slower than 3Com. 288.21
Compatibility	(25)	Excellent (25)	Excellent (25)	Excellent (25)
Flexibility	(50)	I/O addresses supported: 200-270, 300-370; supports interrupts 2, 3, 4, 5, 10, and 11.	Supports I/O addresses 240, 280, 200, 300, 320, 340, 360; supports interrupts 2 (9), 3, 4, 5, 10, 11, 12, 15.	Supports I/O addresses 300, 320, 340, 360; supports interrupts 5, 9, 12, 15.
Documentation	(75)	Excellent (50) Complete; few illustrations; cramped layout; fold-out card available for installation and configuration; toll-free fax-back service. Very Good (56.25)	Excellent (50) Detailed; good diagrams; no index.	Very Good (37.50) Easy-to-read, 50-page booklet; detailed installation instructions; numerous illustrations; does not explain driver configuration; good diagrams, pinouts and complete board specs; Good (46.88)
Setup	(150)	Installation software allows you to load drivers onto the server then automatically download them to each adapter; another utility lets you update drivers as necessary; includes self-configuring software and pregenerated IPX drivers for installing in a single machine. Excellent (150)	NE2000 compatible; mostly software configurable, although one jumper resists configuration; setup program prevents you from choosing interrupt or I/O addresses already in use; WSGEN generates IPX.COM.	Good (93.75) Configurable via 18 jumpers and one switch for port selection; READ.ME file on the installation disk offered detailed driver configuration information; WSGEN generates IPX.COM.
Board design	(50)	Slot-length board; no patches or jumpers; surface mount. Excellent (50)	Slot-length board; no patches or jumper wires; semisurface mount.	Satisfactory (75) Midlength board; no patches; semisurface mount.
Support policies	(50)	Three-year warranty; free support weekdays from 7 a.m. to 5 p.m. Pacific time; BBS support. Very Good (37.50)	Three-year warranty; toll-free support weekdays from 8 a.m. to 6 p.m. Central time; BBS support. Excellent (50)	Excellent (50) Lifetime warranty; toll-free support weekdays from 8 a.m. to 7 p.m. Eastern time; BBS support. Excellent (50)
Technical support	(100)	Answered questions completely and promptly; volunteered to send us the latest driver. Excellent (100)	Courteous and knowledgeable; technical support was able to explain problems and how to fix them. Very Good (75)	We were never put on hold; calls were returned promptly; courteous; questions answered accurately. Very Good (75)
Price	(200)	\$199 with 256KB on-board RAM; sold through dealers. 99.50	\$169 with 16KB on-board RAM; sold through dealers. 117.16	\$239 for bus-mastering card with no on-board RAM; sold through dealers. 82.85
Final score		8.6	8.0	7.3

GUIDE TO REPORT CARD SCORES

InfoWorld reviews only finished, production versions of products, never beta test versions.

Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.

Very Good = 0.75 — Meets all essential criteria and offers significant advantages.

Good = 0.625 — Meets essential criteria and includes some special features.

Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Fails to meet criteria in the essential areas.

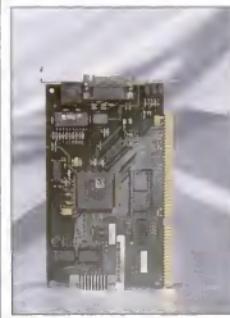
Unacceptable or **NA** = 0.0 — Fails to meet minimum standards or lacks this feature.

Score is determined, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible total of 10 (plus bonus). Products rated within 0.2 points of one another differ little.

We now score speed and price. Hardware products by a factor of two. The higher the cost, the less expensive product in each of those two categories receives the maximum points possible. All other units receive a percentage of the maximum points determined by dividing their results by the leader in the category. For example, a product that is twice as expensive as the lowest cost unit receives half the points.



Intel Corp. is located in Hillsboro, Ore., and can be reached at (800) 538-3373 or (503) 629-7402; fax: (800) 525-3019.



NetWorth Inc. is located in Irving, Texas, and can be reached at (800) 544-5255 or (214) 929-1700; fax: (214) 929-1720.



Racal-Interlan Inc. is located in Boxboro, Mass., and can be reached at (800) LAN-TALK or (508) 263-9929; fax: (508) 635-9140.

SMC EtherCard Plus Elite16T	Thomas-Conrad TC5143-T Ethernet Adapter	3Com EtherLink III 16-bit Combo
265.2 minutes; 1 percent slower than 3Com. 295.3	265.0 minutes; 1 percent slower than 3Com. 296.15	261.6 minutes; fastest Ethernet card. 300
Supports I/O addresses 200, 220, 240, 260, 280, 2A0, 2E0, 300, 230, 340, 360, 380, 3A0, 3C0, 360; supports interrupts 2, 3, 4, 5, 7, 10, 11, 15. Excellent (25)	Supports I/O addresses 240, 280, 200, 300, 320, 340, 360; supports interrupts 2, 3, 4, 5. Excellent (25)	Supports I/O addresses 200-3E0. Supports interrupts 3, 5, 7, 9, 10, 11, 12, 15. Excellent (25)
Comprehensive; includes configuration, troubleshooting, quick-start guides; extras include topology diagrams and cable specs. Excellent (50)	Clear and detailed; good illustrations; includes troubleshooting guide, table of contents; no glossary or index. Excellent (50)	Thorough; helpful diagrams; table of contents, index, glossary; Rolodex card with support numbers, warranty fulfillment, etc.; documentation is combined for several models; nice layout. Excellent (50)
Possible through software, or you can manually set five jumpers to configure; no pregenerated IPX drivers, but IPX.COM is auto-configuring. Good (93.75)	WSGEN generates NE2000 driver; comes with two software setup utilities — one is menu driven and includes diagnostics, the other is a command line program and speeds setup; one "Ooops" jumper resets configuration, one jumper is for Boot PROM. Good (93.75)	No pregenerated IPX driver, but it is auto-configuring; a menu program steps you through driver installation and board set-up. Very Good (56.25)
Slot-length board; no patches or jumper wires; semisurface mount. Excellent (50)	Slot-length board; no patches or jumper wires; semisurface mount; very few components. Excellent (50)	Slot-length board; no patches, single integrated chip set; semisurface mount. Good (93.75)
Five-year warranty; toll-free support weekdays from 8 a.m. to 9 p.m. Eastern time; BBS support. Excellent (50)	Five-year warranty; toll-free support seven days a week, 24 hours a day; BBS support. Excellent (50)	Lifetime warranty; toll-free support weekdays from 6 a.m. to 6 p.m. Pacific time; BBS support. Excellent (50)
Answered correctly; were friendly and helpful but slow to return our calls. Good (62.50)	Friendly, helpful, knowledgeable. Very Good (75)	Knowledgeable; answered all of our questions correctly. Very Good (75)
\$199 with 16KB on-board RAM; sold through dealers. 99.50	\$159 with 16KB on-board RAM; sold through dealers. 124.53	\$225 with 4KB on-board RAM; sold through dealers. 88
		8.2



Standard Microsystems Corp. is located in Hauppauge, N.Y., and can be reached at (800) SMC-4-YOU or (516) 435-6394; fax (516) 273-1803.



Thomas-Conrad Corp. is located in Austin, Texas, and can be reached at (800) 332-8683 or (512) 836-1935; fax: (512) 836-2840.



3Com Corp. is located in Santa Clara, Calif., and can be reached at (800) NET-3COM or (408) 764-5000.



Ansel's hub has adapter built in

Ansel Communications' 2104 4 Port Internal Hub with Built-In Adapter is a unique solution for networking small workgroups. The product combines a standard 16-bit Ethernet adapter card with a four-port hub. The four-port hub, mounted right on the card, provides a 10Base-T connection to any four nodes on the network as well as a 10Base-2 BNC connection, giving the card a total of five connections.

Ansel's connection scheme gives the card simultaneous dual media capability. Thus, if your network contains both 10Base-T and 10Base-2, the card can connect to both without the need for a second card in the server. If you use this card in the server, you may, for example, want to use the four UTP ports for various dedicated stations — such as a print server, fax/modem pool, or tape backup unit — and the BNC connector for the main cabling within the network. Similarly, you could use the card in a workstation to connect other nodes right to the back of the workstation.

The board is bus mastering and compatible with Novell Inc.'s NE2100. It is software configurable for easy setup and offers an optional plug-in module that allows the card to support an additional four ports.

The 2104 works with most major networks and retails for \$399. Ansel Communications is headquartered in San Jose, Calif., and can be reached at (800) 998-2675.

— Rod Chapin

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In the competitive world of spreadsheets, that one is Microsoft® Excel for Windows™.

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We study how people use their spreadsheets. What tasks they do every day. We track their every keystroke. And we ask questions.

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and formatting spreadsheets.

And we developed a way to instantly make eye-popping charts and graphs, even if you've never made them before. We named it, appropriately, ChartWizard.

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We tested our improvements. In the field. And in the lab. With experts. As well as with inexperienced spreadsheet users.

To date, we've invested over 400 cumulative years of development and testing to create something truly remarkable: a spreadsheet that actually works the way you do.

Which brings us to our final point, for which we'll refer to that unassuming piece of wood on the other page.

Maybe the Babe could have hit a home run with a rolled-up newspaper. Still, he used the tool that was best for the job. At the risk of sounding presumptuous, don't you think you should too?



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separately or as
a part of The
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BENCHMARKS**Ethernet cards**

	Ansel NS 2100-3	Cabletron E2110	CNet CN600E	D-Link DE220CT	Eagle NE2000 Plus 3	HP 27247B PC LAN Adapter/16 TP Plus	IBM LAN Adapter for Ethernet	Intel EtherExpress FlashC LAN Adapter	Networth UTP168 10Base-T Interface Card	Racal Interlan N6510	SMC EtherCard Plus	Thomas-Conrad TC5143-T Ethernet Adapter	3Com EtherLink III 16/bit Combo
Five workstations ¹	265.2	268.2	266.2	264.9	265.9	265	266.9	266.8	266.7	272.3	265.2	265	261.6
One workstation ²	38.6	39.5	39.3	38.9	39.3	39	39.3	39.5	39.3	42.2	39	39.1	37.9

Times in minutes.

Lower numbers indicate better performance.

¹ Report card speed score based on total time for five stations. Workstations were one Dell 25-MHz 486SX, one 33-MHz Dell 386DX, one Compaq 20-MHz 386SX, and two AST 286/12 Bravos.² Dell 25-MHz 486SX.**FEATURES****Ethernet cards**

	Ansel NS 2100-3	Cabletron E2110	CNet CN600E	D-Link DE220CT	Eagle NE2000 Plus 3	HP 27247B PC LAN Adapter/16 TP Plus	IBM LAN Adapter for Ethernet	Intel EtherExpress FlashC LAN Adapter	Networth UTP168 10Base-T Interface Card	Racal Interlan N6510	SMC EtherCard Plus	Thomas-Conrad TC5143-T Ethernet Adapter	3Com EtherLink III 16/bit Combo	
Chip set	AM0 PCNET ISA AM79C960NC OP83902	National Semiconductor proprietary	CNet proprietary	D-Link proprietary	National Semiconductor ATLANTIC	HP proprietary	National Semiconductor ATLANTIC	Intel 82566 ATLANTIC	National Semiconductor ATLANTIC	AM0	SMC proprietary	National Semiconductor ATLANTIC	3Com proprietary	
Media types	BNC, AUI, RJ-45	AUI, RJ-45	AUI, RJ-45	BNC, RJ-45	BNC, AUI, RJ-45	AUI, RJ-45	RJ-45, AUI, BNC	BNC, AUI, RJ-45	AUI, RJ-45	AUI, RJ-45	AUI, RJ-45	AUI, RJ-45	BNC, AUI, RJ-45	
Options	Boot PROM	64K RAM, Boot PROM	Boot PROM	Boot PROM	Boot PROM	Boot PROM	None	None	Boot PROM	Boot PROM	Boot PROM	Boot PROM	Boot PROM	
I/O addresses	300, 320, 340, 360	220, 280, 300, 380	200, 220, 240, 280, 300, 320	240, 280, 300, 320	240, 280, 300, 320	100, 280, 300, 320	240, 280, 300, 320	200-270, 240, 280, 300-370	200-270, 240, 280, 300, 320	300, 320, 340, 360	200, 220, 340, 360	200, 220, 340, 360	200, 360	
Interrupts	5,10, 11,15	3,4, 5, 7, 9, 10, 11, 12, 14, 15	2, 3, 4, 5, 7, 10, 11, 12, 14, 15	3, 4, 5, 9, 10, 11, 15	3, 4, 5, 9, 10, 11, 12, 15	3, 4, 5, 6, 7, 9, 10, 11, 12, 15	3, 4, 5, 7, 9, 10, 11	219, 3, 4, 5, 10, 11	2, 3, 4, 5, 10, 11, 12, 15	5, 9, 12, 15	2, 3, 4, 5, 5, 7, 10, 11, 15	2, 3, 4, 5, 5, 7, 10, 11, 15	3, 5, 7, 9, 10, 11, 12, 15	
Status LEDs	Link, Activity	Link, Activity	Link, Activity	Link, Jabber, Collision, Power	Link, Polarity	tx, rx	Link, Activity	Link, tx, rx, Collision, Polarity, Port Selected	Link	Transmit, Receive, Polarity, Link	tx, rx, Collision, Link	tx, rx, Collision, Link	None	
SNMP compatible	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	
Bus mastering	Yes	No	No	No	No	No	No	No	No	Yes	No	No	No	
NOSES supported	NetWare 2.x, 3.x,4.0, LAN Manager, Windows for Workgroups, IBM LAN Server, DEC LAN Server, Pathworks, Sun PC NFS, DEC Pathworks, Banyan Vines	NetWare 2.x, 3.x,4.0, LAN Manager, IBM LAN Server, FTP PC/TCP D-Link LAN Server, NFS, DOS, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Windows for Workgroups, SCO Unix, Sunsoft, Interactive Unix	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP	NetWare 2.x, 3.x,4.0, LAN Manager, SCO Unix, Windows for LAN Manager, Windows NT, Workgroups, Sun PC TCP/IP for FTP PC/TCP, LANtastic LAN Manager, IBM LAN Server, 3Com+Open 3Com+Shares, DEC Pathworks, Banyan Vines, Sun PC NFS, Packet Drivers for TCP/IP

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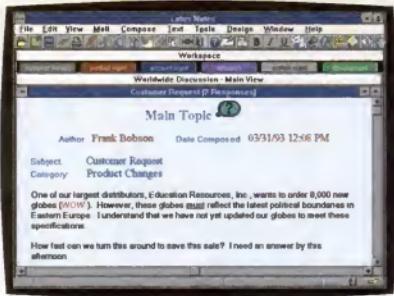
V-1

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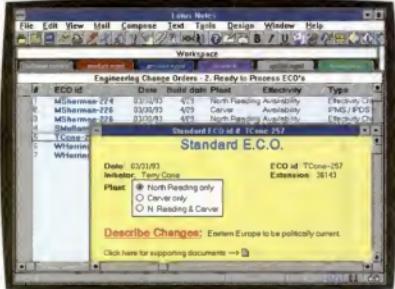
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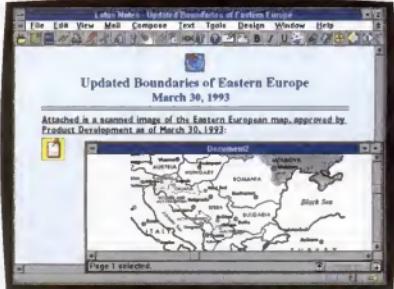
- 1.** This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems worldwide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.



- 2.** The field rep in Texas is working on a request from a customer. But to make the sale the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



- 5.** Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.



- 6.** After lunch he opens a document from Ellen in product development, who has responded with the necessary changes, and scheduling information. The new art was scanned directly through Lotus Notes Document Imaging from the art department. James approves the art for manufacturing.

How Lotus Notes Releases

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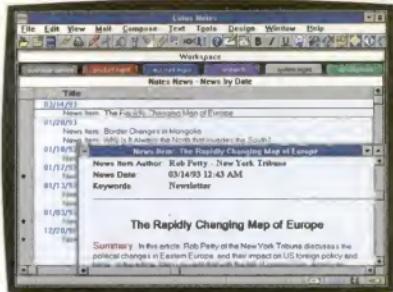
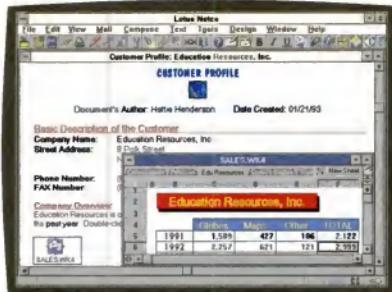
Just watch how James Carlton, a new district manager at Global Publishing, uses Notes Release 3 to solve a major global problem in short order. See how he uses information from on-site and remote locations. From both inside the company and external sources. Across a



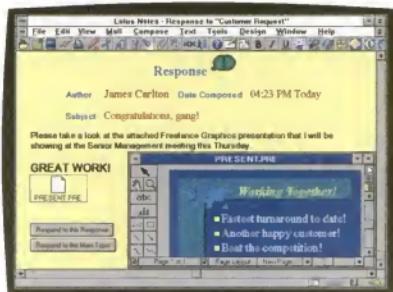
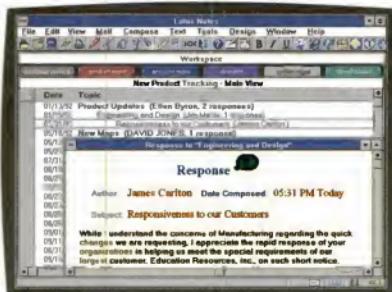
variety of platforms. How he uses applications such as Account Tracking, Newswire, and Engineering Change Orders to get a new product developed fast. And how he creates an informal team spanning a range of departments to do it.

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3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.



7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.

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8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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REVIEWS

Norton Utilities 7 takes lead by small margin

Upgrade accommodates more powerful systems and added features for MS-DOS 6.0

BY TOM BIGLEY REVIEW BOARD

In the decade since early versions of Norton Utilities began to show up in PC guru's tool boxes, this has become a must-have program for nearly every serious user.

Largely an evolutionary upgrade for MS-DOS 6.0 and today's high-powered hardware configurations, Norton Utilities 7.0 includes a slew of new features and improvements. There are more than 30 separate utilities, most of which perform a multitude of functions, and all of which are tightly integrated through Norton's main menu and by their common appearance and operating procedures. Nearly every one of the program's tools can make your computing safer, faster, and easier; and several of the utilities can save your proverbial life when that inevitable disaster strikes.

Symantec has made Version 7.0 a worthwhile addition to your collection, even if you are still running DOS 3.3 on your trusty old AT machine. We evaluated Norton Utilities 7.0 using

the same scoring criteria from the last time we reviewed Version 6.0 (see review, July 15, 1991, page 75).

FEATURES:

Norton Utilities 7.0 consists of two brand-new utilities and upgrades of the old favorites for today's operating environments. However, you will not find the calendars, calculators, and other gadgets that are part of such competing packages as Central Point's PC Tools (see review, November 16, 1992, page 136). What you will find in Version 7.0 is a collection of top-notch utilities firmly dedicated to three basic goals: data protection and recovery, performance optimization, and productivity enhancement.

The two newcomers to Norton Utilities are Norton Diagnostics (NDIAGS), an impressive new hardware diagnostic tool that thoroughly checks every aspect of your system, and Duplicate Disk (DUPDISK), a welcome replacement for DOS' DISKCOPY, which will copy your disks in a single pass and make multiple copies without rereading the original.

Almost all of the existing utilities feature enhancements. If you have large hard drives (up to 2 gigabytes), Norton Utilities 7.0 can handle them, if you provide enough extended or expanded memory. If you use DOS 6.0's DoubleSpace, Stac Electronics' Stacker 2.0 or 3.0, or AddStar's SuperStar or SuperStar Pro compression programs, Version 7.0 utilities, including Speed Disk (SPEEDISK), Disk Doctor, and Norton Cache (NCACHE), can handle them all.

SPEEDISK, Norton's powerful system editor, boasts a new feature called Advanced Recovery Mode (ARM). ARM makes it possible for DISKEDIT to recover data from hard drives even after they have suffered physical damage. Symantec has improved FILEFIX, which can now repair data files from Excel 3.0 and 4.0, all versions of Lotus 1-2-3 to 3.x, Quattro Pro, WordPerfect 5.x, and dBase III and IV files. FILEFIX now includes a Search-and-Replace function that lets you search for and replace text strings across your drives. NDIS, Norton's version of the 4DOS replacement for COMMAND.COM, offers a variety of enhancements, including improved copy, delete and move functions; extended wild-card support; easier setup and configuration; and the capability to color-code directory listings.

We were disappointed that Symantec still has not closed its ring of data protection by including a backup utility. Although DOS 6.0 provides a limited edition of Norton Backup 6.0, it lacks the tape support and other features users of Norton Utilities are likely to need.

PERFORMANCE:

We tested Norton Utilities 7.0 on four different PCs. Our primary test bed was a Gateway 2000 386DX/12X with a Cyrix 486/25 CPU upgrade and an Intel 80387 math coprocessor. To verify our results, we performed some supplemental test-



On-line the depth and breadth of Norton Utilities 7.0, Symantec provides several on-line help options, such as the main menu Help option for detailed information.

ing on a Data General Walkabout 386SX/16/laptop, a Compaq Deskpro/M 486DX/266 EISA, and a Gateway 2000 486DX/33. All the machines ran DOS 6.0, except the Gateway 486DX/33, which ran DOS 5.0. The three desktop units had 16MB of RAM, and the Data General laptop had 4MB of memory. The Gateway 2000 386/25's two 210MB integrated drive electronics (IDE) drives, and Data General's 40MB IDE drives were compressed with DOS 6.0's DoubleSpace.

If you've been using Norton Utilities 6.0, you will feel instantly comfortable with Version 7.0; the look and feel are identical. You will find the same familiar screen layouts, complete with menu bars across the top, pull-down menus, pop-up windows, and full mouse support in all the utilities with an interactive mode. You can launch any of the utilities either from the DOS prompt or Norton's main menu utility, which prompts you with its context-sensitive information window that displays the selected utility's function, command-line syntax, and common command-line switches.

We used all the tools in Version 7.0 at least once, watching for any problems in performance, operation, or feel that might logically occur in a new release.

We found, for the most part, the reliable, trouble-free performance we expect from a program that's been a long-standing industry leader. We did run into a couple of glitches.

The new NDIAGS diagnostic utility caused our Gateway 386/25 to reboot almost as soon as the tool began to load. NDIAGS also caused our Gateway 486/33 to frequently lock up while determining the system setup. We finally found a NOKEYTYPE command-line switch that fixed our problems with the Gateway machines, enabling NDIAGS to run properly.

In addition, when NDIAGS set up to run

the comprehensive system memory test, it reconfigured our system with its own start-up files and then rebooted, running itself as the command shell during the testing, then resetting our system to its original configuration when we exited. Unfortunately, Version 7.0 doesn't add the NOKEYTYPE switch to its start-up files, so our Gateway 486 reverted to its previous behavior, and our Gateway 386 went into a continuous load-and-reboot loop. We rebooted from disks, manually added the switch to NDIAGS' start-up file, and finally got the memory tests running. (Note: you'll want to run this test overnight; it took more than 9 hours on the Gateway 386.)

Our second problem arose when we attempted to run SPEEDISK on our Compaq 486DX/266, with its 510MB SCSI hard disk that was more than 85 percent full. SPEEDISK barely got going, only making it to cluster 122, when it stopped and reported that, despite the Compaq's 16MB of RAM, the program was out of memory. This makes us question Symantec's claim that SPEEDISK can support up to 2-gigabyte drives. We had to boot up with a bare-bones configuration to give SPEEDISK enough memory to handle our hard drive. (We found no reference to this limitation in the documentation.) According to the vendor, although Norton Utilities 7.0 can support 2-gigabyte drives, it needs as much conventional memory as possible to get started.

We were impressed with some of NDIS' new features, particularly the wild-card option that lets you define a group of characters in your filter. For example, the wild-card file specification "?[ABC]" will select only those files with "A," "B," or "C" as the second character. We also dressed up our directory listings by color-coding subdirectories and .COM, .EXE, and batch files.

Lacking a suitably damaged hard

REPORT CARD

INFO WORLD

UTILITY SOFTWARE

Norton Utilities

VERSION 7.0



Criterion	Weighting	Score
Performance	(400)	Very Good
Documentation	(80)	Very Good
Ease of learning	(40)	Excellent
Ease of use	(120)	Excellent
Error handling	(80)	Very Good
Support		
Support policies	(40)	Very Good
Technical support	(40)	Satisfactory
Value	(200)	Excellent
Final score		8.3

PRODUCT SUMMARY

Company: Symantec Corp., in Cupertino, Calif., can be reached at (800) 441-7234 or (408) 252-3570.

List price: \$179. Registered owner of previous versions can upgrade for \$49; \$99 if purchased with MS-DOS 6.0.

Requires: Intel 80286 or compatible; DOS 3.3 or later; 640K of RAM (1MB recommended); hard disk with 6MB free disk space.

Pros: Powerful; easy to use.

Cons: No backup utility.

Summary: Norton Utilities 7.0 is a must-have collection of top-of-the-line tools designed to protect your data and improve system performance in today's MS-DOS 6.0 and high-power hardware environment.

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drive, we were unable to check out DISKEDIT's new ARM feature, which should let you recover some data even though DOS doesn't recognize the drive. However, everything else worked fine.

The only real surprise we received while we worked our way through Version 7.0's utilities was the dramatic impact data compression had on SPEEDISK's operating times. Before we compressed the 90-percent-full 210MB hard drive on our Gateway 25-MHz 386, complete optimization with read-verify took just less than 5 minutes. After we used DoubleSpace to compress the drive, the program reported less than 60 percent filled capacity but required more than 2 hours and 15 minutes for the same level of optimization. We ran SPEEDISK again after just enough activity to leave a few holes in our optimized files, and the utility again required more than 2 hours. Our Data General laptop yielded similar results. When we ran SPEEDISK on our un-compressed drives, completion times fell in our previous range of a few minutes.

Part of this time increase is due to the fact that SPEEDISK performs two complete optimizations. First it optimizes the "phantom" drive that holds the compressed volume, then SPEEDISK optimizes the actual compressed volume. Although the first operation is fairly quick, comparable to times of uncompressed drives, the second pass slows things down.

According to the vendor, these findings are an inescapable result of Microsoft's DoubleSpace compression scheme and the sophisticated procedures necessary to safely optimize its volumes. Symantec claims substantial speed advantages over the optimization utilities provided by third-party compression software, although we were not able to confirm that. In addition, the faster times achieved by DBLSPACE /DEFRAGMENT are a result of packing all the data to the front of the compressed volume without actually defragmenting or sorting individual files, as SPEEDISK does.

We also noticed a time degradation in Disk Doctor's surface tests on compressed disks, but only on the order of 20 to 30 percent.

We launched each utility from Norton's main menu and the DOS prompt without a hitch. Although we liked the command-line help available at the DOS prompt, we frequently loaded Norton's main menu for its information window, which jogged our memories as to which utilities handled our desired functions.

Aside from the couple of incidents we encountered, Norton Utilities 7.0 ran smoothly and solidly, which is quite an accomplishment given the breadth and technical nature of this program. Performance earns a very good score.

DOCUMENTATION:

Symantec's reputation for providing top-notch documentation stands untarnished with this release of Norton Utilities. Symantec has condensed Version 7.0's hard copy documentation to a single manual, including a fold-out emergency data recovery guide and various order forms. Unfortunately, Symantec replaced much of the printed documentation with text files on the program disks, of which there are six. The NDOS manual, for example, is almost 1MB in size, and if you plan on using this manual, you will have to print out all 350 pages. You can do a text search on this disk to find what you're looking for so you don't have to print out the entire disk. But Symantec will offer a hard copy version of the NDOS

manual for \$9.95.

The documentation proved well written, informative, and easy to understand. In addition to chapters on each utility, the manual includes Installation and Getting Started sections and several tutorials. There's also an appendix that includes such information as troubleshooting. A complete table of contents and extensive index make it easy to find information you need (except in the case of our out-of-memory SPEEDISK problem).

Symantec provides several on-line help options. Each interactive utility has its

own context-sensitive help available via the F1 key. You can also use the main menu Help option for more detailed help or to access Norton's Adviser, a collection of solutions and fixes for more than 100 common problems in DOS and various popular applications. If you run the utilities from your DOS prompt, adding a "/?" switch displays command-line syntax help for the specified command. Documentation earns a very good score.

EASE OF LEARNING:

Surprisingly, there's not much you have

to learn to use most of the tools in Norton Utilities 7.0. Many run automatically after you launch them and respond to a prompt or two. Several utilities, such as UNERASE and FILEPX, offer both automatic and manual modes. If you opt to work in their manual mode, you will probably want to do it with manual in hand, moving step-by-step through each operation. Although you shouldn't have to learn these utilities to use them in the manual mode, you will need to understand something about file structures.

Before you use DISKEDIT, you might



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want to spend some time running it in its default read-only mode while you explore and learn about your system. Although DISKEDIT is easy to learn and use, you will be courting major disaster if you start editing things before you know exactly what you're doing.

If you are a proficient DOS user, you can use NDOS right out of the box. It is fully compatible with standard DOS commands, and everything you know about DOS will work the same under NDOS. However, once you delve into the utility's array of additional commands

and functions, you will most likely find that the learning never stops.

Installation is automatic, prompting you for just a few easy answers. Norton Utilities saves copies of your original system configuration files with an .NUT extension and identifies any lines it disables in the revised configuration files, noting that they were "remarked by NU7." The program also creates a customized Rescue Disk for your PC, which is bootable and includes the files and utilities you will need to repair your system in the event of a failure. Ease of learning earns

an excellent score.

EASE OF USE:

We found Norton Utilities 7.0 surprisingly easy to use, particularly in view of the variety of technical features these utilities perform. You can run them from either Norton's main menu or the DOS prompt, adding appropriate command-line options and switches in either case. On-line help is available at virtually every turn, even at the DOS prompt. Most of the utilities offer an interactive operating mode, featuring similar display screens

with pull-down menus; clear, easy-to-understand prompts; and full mouse support. Operating procedures are, for the most part, uniform across all the utilities.

We rate ease of use excellent.

ERROR HANDLING:

Symantec has made Norton Utilities 7.0 about as safe and bulletproof as it can be without limiting its capabilities. Both the documentation and the utilities include prominent, informative warning messages whenever system or data damage is possible. DISKEDIT, the most potentially dangerous utility, is preconfigured to read-only mode; you have to deliberately change its configuration before it will write to disk. In addition, most of Norton's repair utilities optionally create Undo files on a separate disk that you can use to restore things to their original condition if a repair attempt fails.

We saw little in the way of error messages. One that caused us some difficulty was an "Insufficient memory (99)" message, which appeared when we tried to run SPEEDISK on a 5MB hard drive that was 85 percent full. The message included a recommendation that we run SPEEDISK from a DOS prompt rather than from within a shell. Although we proved unhelpful, in addition, we could not find anything in the documentation about this error message. Symantec's technicians suggested to run SPEEDISK from a bare-bones configuration that provided maximum memory—a successful solution that we'd already figured out.

The only other "flaw" we found was our previously stated problem with the NDIAVS tool and our Gateway machines.

The two other error messages we received were the result of our own mistakes—trying to read an unformatted disk or an empty drive—and all were clear and easy to understand.

Error handling earns a very good score.

SUPPORT:

Support policies: Symantec provides a 60-day money-back guarantee. It offers unlimited free (but not toll-free) technical support via phone 7 a.m. to 5 p.m. Pacific time, Monday through Friday. You can also receive support by fax, the vendor's BBS, and CompuServe. You also have the option of listening to a recorded collection of common questions and answers. Support policies are very good.

Technical support: The phone lines were jammed when we first called, reportedly due to the recent release of several new products, including Norton Utilities 7.0. Fortunately, by the end of our testing, we were able to get through. It took nearly 2 minutes to wind our way through the voice-routing system to the right technical support line, where we sometimes had to wait on hold anywhere from 5 to 30 minutes. Once we reached technicians, we found them knowledgeable, friendly, and eager to help us.

We rate technical support satisfactory.

VALUE:

Norton Utilities 7.0 lists for \$179 (you can get it for \$99 if you buy it with MS-DOS 6.0). Upgrades for registered users cost \$49. Regardless of which price you pay, Norton Utilities pays for itself many times over. Considering the added features and capabilities, we find Norton Utilities 7.0 an excellent value. □

Tom Bigley is an experienced PC user who works in computer support for the city of Olympia, Wash.

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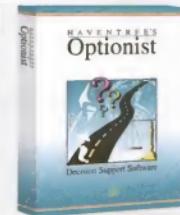
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UPCOMING IN INFOWORLD**JUNE 7****PRODUCT COMPARISON**

Color LCD Projection Panels. As lightweight traveling companions, color LCD projection panels interface a portable PC to an overhead projector to put impressive presentations on a big screen. *InfoWorld* surveys the active matrix projection panels competing for market share, all with 640-by-480 or better resolution, including units from 3M, InFocus Systems, Apollo Audio Visual, Prisma, Sharp, and Telex. We will assess color fidelity and all-around display quality, measure color reproduction, and compare ease of setup and overall performance.

ENTERPRISE COMPUTING

Feature: Integrating Unix workstations and servers into the PC LAN environment. We take a real-world look at what you can and cannot do to provide end-users with application-level interoperability.

Management: How IS departments around the country are redefining mainstream computing with the integration of PC LAN and host systems. The goal of end-user information access requires not only systems interoperability but the cooperation of previously separate PC and host support staffs.

JUNE 14**PRODUCT COMPARISON**

Portable PCs With Docking Stations. For users who split their computing time between the road and their offices, notebooks with docking stations offer the best of both worlds and the easiest way to live the "double life." Combining our usual desktop and notebook computer testing protocols, *InfoWorld* will evaluate portable PCs with docking stations from several leading manufacturers, including Apple, ALR, Compaq, IBM, and NEC. We will assess screen readability, keyboard quality, hardware and software compatibility, and expandability.

ENTERPRISE COMPUTING

Feature: Windows NT — Is it the next-generation LAN client operating system or a high-end server operating system? Microsoft says both. *InfoWorld* looks at how NT will fit into existing corporate LAN systems.

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The Buyers Assurance Seal is a circular logo containing the text "BUYERS ASSURANCE SEAL". It features a stylized globe graphic in the background and a ribbon-like border.

PC DOS / from page 1

IBM may ship DOS without compression

sion utility is that it wants to make sure the technology it chooses works smoothly with OS/2.1.

One problem Microsoft has with DoubleSpace is that it makes MS-DOS 6.0 compressed files incompatible with Windows NT. Microsoft has acknowledged that the first NT release will not support the DoubleSpace utility.

"We are very interested in having our DOS users move to OS/2, so we want to provide a compression technology that lets them do that," said Lee Reiswig, president of PSP.

IBM officials have discussed licensing Stac Electronics Inc.'s Stacker compression program for DOS and Windows, but no deal had been made.

A second option for a compression utility for PC DOS would be a "Stacker-like" program. IBM has developed internally, officials said.

IBM has not decided whether the next PC DOS version with a compression utility will be called 6.1, according to Reiswig. PSP still plans to ship the first version of PC DOS in late June

or early July, with the follow-up coming a month or two later, one IBM official said.

IBM has also reached an agreement with Paper Software Inc. of Woodstock, N.Y., to license the company's graphical shell for inclusion in a future version of PC DOS 6.x.

The shell, called SideBar, has the look and feel of PSP's Workplace Shell and some of its features, including drag functions and graphical folders. SideBar can operate in less than 280KB, compared with the several megabytes that OS/2's Workplace Shell requires.

IBM will customize SideBar, originally written as a Windows shell, to resemble the Workplace Shell, although the program will function primarily as a program launcher, IBM said.

IBM and Paper Software said the graphical shell would be in beta testing sometime this summer, but they declined to give an availability date.

Other new features in PC DOS include support for PCMCIA; pen support for DOS; and an improved editor, E-Editor, borrowed in part from OS/2.

PORTABLE / from page 1

Apple, HP raise curtain on communicators

modern and three months of access to AppleLink that will expand to include news wires and reservation services.

At the high end, users will get the AppleLink connection, additional services, and a PCMCIA card with a standard modem and a radio modem.

After three months, users will be able to continue accessing AppleLink for a fee, sources said.

Apple has yet to set some of the base-level specifications of the device, which will include a

601 RISC chip designed by ARM, a PCMCIA card slot, a pen operating system, infrared communications, and a touch-screen display. It operates from four pentium batteries.

The base-level system is expected to include 2MB of ROM and 1MB of RAM that can be expanded to 4MB.

HP will provide a different form of personal communications with its \$2,000 OmniBook 300, to be introduced June 7.

The 2.2-pound computer, which will ship immediately, will have infrared communications that allow it not only to exchange data with PCs but to remotely operate them as well.

Like Newton, the OmniBook 300 will use Traveling Software Inc.'s Universal Communications Object linking code, sources said.

The code recognizes the hardware involved and optimizes file transfer for those machines.

A key feature of the OmniBook 300 is its full-size keyboard. (See "HP puts full-size keyboard in subnotebook," March 29, page 3.)

The keyboard allows users to touch type and to operate the system as they would any other Windows PC. It has a new type of pointing device that points from the right side. The 3.5-volt system can operate for 5 to 10 hours, depending on configuration.

Stuart J. Johnston contributed to this article.

NT / from page 1

Keeps apps waiting

"Our complete line of database servers and application development tools will be available on NT within the coming year," said Tim Shetler, vice president of product marketing at Informix. New to Windows is Informix-4GL for NT, due out 90 days after NT ships.

NT will bring many other robust client-server systems to Windows for the first time. Objectivity DB Server Kit for NT will let developers deploy single-user object-oriented database applications under NT and Windows 3.1 via Win32s. Objectivity Inc. plans to ship the product in August for \$2,995. A multi-user version will follow.

Bachman Information Systems Inc. will ship CASE tools for NT on July 1.

Intervolve Inc. will ship its PVCS version control develop-

Client/server vendors target NT for development releases

(all products are for Windows NT for Intel)

Servers

Microsoft SQL Server
Oracle7
Gupta SQLBase Server
Ingres Intelligent Database
Informix-SE

Availability

60 days after NT ships
ASAP after NT ships
Beta 30 days after NT server ships
90 days after NT ships
Summer 1993

Clients

Microsoft Visual Basic
Borland Paradox
Powersoft PowerBuilder 3.0
Gupta SQLWindows
Software Publishing Superbase

Availability

TBA
TBA
Q3
1993
1993

ment software for NT soon after NT ships. O-E Software will ship Windows NT versions of its products within six months of NT's shipment, allowing time for ODBC and other database

connectivity pieces to ship, said James Hebert, vice president of business development.

Shawn Willett, Kelley Damore, and Jim Hammell contributed to this article.

Cardinale said.

The rules-based mail processing in Release 2.0 provides a tool for managing both incoming and outgoing messages based on criteria set by the user or administrator.

Other features include auto-routing, filtering, simplified mailbox management, a spelling checker, the capability to import or export a file without the use of the clipboard, trash folders, and the capability to store a message in progress, said Chuck Stegman, cc:Mail enterprise marketing manager.

Release 2.0 will carry the same price tag as Release 1.0: \$495 per post office. Lotus will provide upgrade pricing in June.

CC:MAIL / from page 1

Upgrade delivers rules-based routing

(MTA) on multiple platforms.

"We expect to release the cc:Mail X-400 MTA in early 1994 and stage the release of various platforms in the ensuing months," said Rex Cardinale, vice president and general manager of the cc:Mail division, in Mountain View, Calif.

cc:Mail for Windows Remote will come 90 days after the release of cc:Mail for Windows 2.0, Cardinale said.

Sources said Lotus will unveil cc:Mail Wireless at the Electronic Mail Association show in Atlanta. Lotus declined to com-

ment on the release date, but sources said the wireless version will be released on systems from wireless providers RAM Mobile Data and Ericsson GE Mobile Communications Inc.

Other cc:Mail versions are slated for release by the end of this year. The OS/2 2.1 version, stalled by IBM's delay of that product, will go out approximately one month after IBM releases OS/2 2.1 Workplace Shell, according to Cardinale.

Lotus will roll out cc:Mail on Hewlett-Packard Co.'s Motif and on IBM's AIX by year end.

Lotus SmartSuite 2.0 improves ties to Notes

Lotus Development Corp. announced today that it has designed the SmartSuite 2.0 application bundle for tighter integration with Lotus Notes.

Ami Pro, Freelance Graphics for Windows, and 1-2-3, Release 4 for Windows can all store files on a Notes Server. These files include various search fields, such as size, author, last update, or subject; they can be searched using

these fields as criteria through Notes Views. This method allows a user to, for example, find all the worksheets from a particular sales manager, or those that have been created within the last week.

The \$795 applications bundle, set to ship in June, also has the SmartSuite Application Manager, a tool that makes it easier to toggle between applications.

RECALL / from page 1

Short circuit in IBM notebook forces recall

The short circuit occurs when a conductive object, such as a paper clip or a metal screw, touches the system's circuitry.

Although IBM officials believe the possibility of widespread incidents is remote, they are voluntarily recalling the system and will repair or replace all L40SX notebooks.

Until users repair the systems, however, IBM recommends that they take out the battery and power the system through

its AC adapter. They also suggest that users disconnect the AC adapter when they leave the system unattended.

"I would view this as extremely positive, because at least IBM is taking action," said Bob Holmes, computer technology research analyst for Southgate California Gas Co., in Los Angeles. "There is a potential problem and they are fixing the machine for you. They have not done this in the past."

The company expects to make the shipping arrangements through its network of dealers, who will receive more information about the process in the next 30 days, an IBM representative said.

The machine was introduced in March 1991, but the short-circuit problem has been reported only recently. IBM sharply lowered the price of the L40SX at last twist over the last 12 to 18 months and stopped making the system in February.

An IBM representative did not know why complaints had not surfaced sooner.

REVIEWS / TEST DRIVES

First Look / Kevin Strelo

Ecco puts everything in its place with outlining format

I'm actually putting my life into Ecco — that's how compelling it is as a way to organize the tangle of interrelated people, phone calls, projects, tasks, meetings, and appointments that is my professional life. I'm using it now even though the product is still in beta. I'm doing it even though the version that will handle group schedules is six months away. Yes, I'm even willing to copy my schedule over to that shared department resource daily if it means I can use Ecco.

Why? Because Arabesque Software Inc. has created an incredible interface that absolutely, positively urges you to tie information together in just the ways you need to view it.

AN EXAMPLE. Say a call comes in on voice mail — an interesting idea about a possible testing task for an upcoming product comparison. I type the name and number in Ecco's phone book and check the Call column. Later, when I have time to return calls, I open the Call Back folder and see the message. I click on the phone icon to dial the person and begin taking notes along the way.

The task now becomes clearer: I've got to find a programmer if we're going to tackle the task. After hanging up, I edit the outline slightly to reflect my action item and double-click on the ToDo column, which pops up a calendar. I choose a due date, click the Ticker-timer button, and choose to be reminded about the item three days before it's due. Then I drag the conversation/ToDo outline to the appropriate product comparison folder. I do all this without stopping to think because, although Ecco's as crowded with controls as a jet plane's cockpit, everything is easy to find.

The next time I call the person who suggested the task, the outline of our phone call is under the person's name in my phone book, as are all our previous conversations, with the most current listed first. The outline reflects the elaborations I made when I was working on the idea in conjunction with related topics in the project folder. It also includes further details that came up when the outline surfaced as a tickler, and when I actually firms up everything and marked the task completed.

OUTLINE FOUNDATION. Ecco bolsters the strengths of a good outliner with the capability to cross-reference. You can take any outline, or any point from any level in an outline, and place it in an



Ecco folder with related information. Items then appear in all the contexts in which they belong. An item, though stored only once, might appear in folders for a project, that day's tasks, calls to return, etc. Edit the item anywhere and the information changes everywhere.

Ecco also has an elegant form for the phone book. The calendar is smart, and the interface is well designed. I found it fairly easy to designate a specific level of follow-up and tickling support so that I actually did it. Finally, the program is fast. Searching, moving to another view, filtering out items, collapsing long outlines, and everything else I've tried in Ecco happens in a snap.

EVEN THE GIMMOS. At first I thought Arabesque had overloaded its product with features I'd never use, such as Shooter. However, now I'm wondering if there is any excess baggage. I've already found myself using Shooter, which lets you select text in any application and slide it into an Ecco outline without returning to the program.

TEMPLATES. Ecco includes templates for various areas of work: time management, legal, project management, sales, and research.

Without the templates, Ecco would be as bewildering as Agenda was before Lotus realized (too late to save the product) that the program was so flexible that users needed guidance. Ecco's templates are similar to Agenda's, but they're more flexible, because an outline can organize any kind of information, while Agenda's strengths lay solely in cross-referencing.

I chose the Time Management template, which includes outlines of how to use various features, and before long I was flying solo. True, I was still employing the push buttons that did the equivalent of making the wings fold off, but that's what Undo is for. Soon I wanted a way to jettison the excess baggage (fictional characters, tasks, and appointments) from the template. I hope Arabesque will make it easy to dump the sample data before the final product ships.

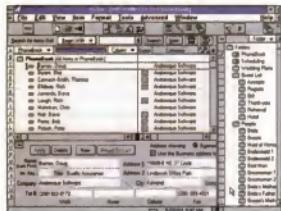
IMITATION. You couldn't possibly achieve what Ecco achieves with a slavish imitation of a paper-based time-management product. This is an original program, folks. On the other hand, when you print out your calendar or your phone book, Ecco conforms to the useful, time-proven formats required by Day-Timer and Franklin binders.

I have a few quibbles with Ecco. For example, every other PIM I've used has let me paste the text from an E-mail message as a "note" or some similar attachment to an appointment or task. The closest Ecco comes to this is letting me store the note in Windows' NotePad and embed the newly created file as an OLE object in an outline. On the other hand, maybe I'll just shoot the E-mail nuggets back into my calendar and be that much more efficient for it.

Ecco will retail for \$99 in the first 99 days after it ships in June. After that the price goes up to \$395.

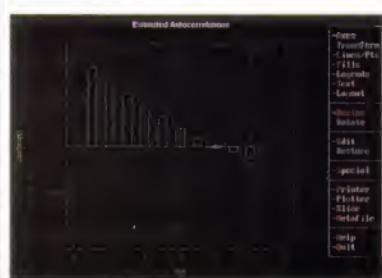
Arabesque Software is in Bellevue, Wash., can be reached at (206) 869-9600.

Kevin Strelo is InfoWorld's executive editor of reviews and testing. First Look examines new products before they have been formally reviewed.



Ecco makes it easy to organize the daily web of calls, projects, and meetings.

STATISTICS SOFTWARE



New to Statgraphics Plus 6.0 are an on-screen editing toolbox and bit-mapped and PostScript font support.

Overhauled Statgraphics still lags in user interface

BY ALAN J. FRIDLUND
REVIEW BOARD

Among PC statistical packages, Statgraphics, from Manugistics Inc., has always been one of the most sophisticated, yet one of the easiest to learn. This program led the statistics pack in providing menus rather than esoteric commands, and it contained unique, technical and mathematical functions that made it ideal for industrial and engineering users. Unfortunately, Statgraphics has always been plagued by very limited data capabilities.

Statgraphics Plus 6.0 is a major upgrade that solves the memory problem, adds some long-needed features, and retains the program's technical prowess. This is a must-have upgrade for existing Statgraphics users. But despite the overhaul, it still lags behind in user interface and graphics capabilities.

You will immediately notice the changes to Statgraphics. The old bounce-back menus are optional. They have been supplanted by pop-down menus that look standard but operate idiosyncratically; the menu choices don't use the Alt key, and submenus always appear as you pan through the main menu options. When the menus start to get in the way, a macro facility lets you record your keystrokes so you can glide through many program steps at once.

Statgraphics Plus offers perhaps the widest range of standard analyses of any PC statistical package. These include such descriptive statistics as cross-tabulation and histograms, and exploratory graphs such as box and stem-and-leaf plots. Analyses extend to nonparametric

tests, correlation, regression, variance analysis, and an array of multivariate analyses. You supply the data for these analyses either via the keyboard or by importing ASCII, Lotus 1-2-3 and Symphony, dBase, DBF, or Atlas Graphics files. (You can export to these formats as well.)

Statgraphics Plus' graphics are similarly varied: bar, pie charts; histograms; exploratory and icon (e.g., sun-ray and x, y and z scatterplot) plots; contour plots; scatterplot matrices; and time-series plots. Version 6.0 includes a new on-screen graphics editing

You will immediately notice the changes to Statgraphics.

toolbox, but it's primitive. If you want to change your graph, the program shuffles you back to the menu mode, where you type in the changes and the program redraws the entire graph.

On the plus side, though, are the solidity and accuracy of Statgraphics' procedures and its unique math capabilities. Also, Statgraphics is written in a programming language (APL), and Manugistics — which itself makes APL products — gives you many of Statgraphics' math operations, so you can build your own analyses from scratch. Statgraphics Plus lists for \$1,395.

Manugistics, in Rockville, Md., can be reached at (800) 592-0050 or (301) 984-5123.

WINDOWS REPORT WRITER

CA-RET/Xbase report developer has potential

BY MAURICE FRANK REVIEW BOARD

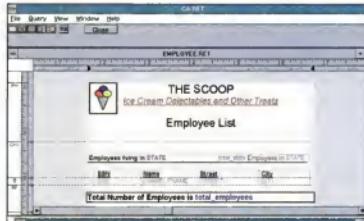
Computer Associates International Inc. hopes developers and end-users who need to develop reports from database files will turn to CA-RET/Xbase. Like R&R for Windows, from Concentric Data Systems, and Crystal Reports, from Crystal Services, CA-RET (Report Engineering Technology) runs under Windows and works with Xbase files. (For test drives of R&R and Crystal, see May 17, page 106 and May 24, page 172, respectively.)

CA-RET/Xbase, Version 1.0 handles Base II, III, III Plus, and IV-compatible table, index, and memo files. The program reads Clipper indexes but does not support FoxPro's unique index and memo files. CA-RET also reads command-delimited text files. Like the products we looked at in previous issues, CA-RET offers the reporting basics and can print reports in a variety of formats.

CA-RET is probably more accessible for end-users than the other two products.

Building a report in CA-RET involves

two sets of activities: defining the query that selects data and formating the report layout. When you start a new report, you must choose either dBase or text data and specify the file and fields to use. You can also specify other aspects of the query or come back to that later. After you select the data source, a dialog appears offering five kinds of report layouts: tabular, form (vertical), form letter, labels, and freestyle. CA-RET automatically arranges the fields for most of these layouts, although you can change them.



CA-RET can display graphics in reports as well as browse query results while designing the report.

MACINTOSH DIAGNOSTIC UTILITY

Snooper stands out from the crowd of plain-looking diagnostic utilities

BY JEFF ANGUS REVIEW BOARD

Most diagnostic utility packages look alike, as if they were designed by the same electrical engineer. The programs and documentation usually appear tidy, terse, and fairly dull.

Snooper 2.0, a recent Macintosh diagnostic utility release, breaks that mold with a colorful but logical interface and prevent documentation. And it works.

The Maxx Corp. product is a thorough diagnostic tool for Macs. (The vendor recently released Version 2.04, which includes information on the latest Apple releases, such as the Color Classic and PowerBook 165c.) Snooper provides testing and analysis areas for the system board, hard and floppy drives, video components, and audio equipment.

The program's clean design dispenses with the malady I call "Tellerism" (because a program has the capability to test a component, it's included in the product even if it's irrelevant). Moreover, Snooper's documentation takes snide potshots at diagnostic products that suf-

fer from Tellerism ("We prefer to use the space in Snooper for things that really test something") and at the mostly useless benchmarks that haunt such utilities.

Snooper doesn't just tell you that a component has failed a test; it usually offers a possible fix for the problem and whether it's really a task for a trained technician or something you can try yourself. Although this is a valuable approach, Snooper does not refer consistently to the same place for solutions. Sometimes Snooper proposes the solution in a dialog box and other times in the documentation.

In the system board testing area, called Logic Tests, Snooper recognizes which Mac model you are working on and shows a fairly accurate image of your particular system board. As your mouse cursor hovers over the board image, a help area displays text describing the underlying component's name and function. The on-line help also includes descriptions for system and "Sad Mac" errors. However, this same information cannot be found in the hard copy documentation, nor can you print it out.

Snooper features the usual logging and reporting capabilities, useful for tracking maintenance schedules and previous conditions.

Unless you are an electrical engineer, I recommend checking out Snooper. At \$249, it costs more than many diagnostic utilities, but the program is a class act.

Maxx, in Glendale, Calif., can be reached at (800) 788-6292.



With Logic Tests, Snooper can tell which Mac machine you are using and display your system board.

browse the data returned by the query while you design the report, a useful feature not offered by R&R or Crystal.

CA-RET has the capability to open multiple windows for different reports and data sets.

CA-RET is visually appealing because it displays fields in blue and has grid lines to delineate lines and columns. However, CA-RET's user interface is not always superior. It labels the left border of a report band with cryptic names such as PH (page header) or GH1 (group header level 1). R&R spells out band names and places the field name on group header and footer bands. Crystal lets you choose either method.

You can add BMP graphic files to page headers or footers, but CA-RET can't print a different graphic for each record.

CA-RET needs at least one major upgrade, maybe two, before it reaches its full potential.

CA-RET/Xbase lists for \$295.

Computer Associates International Inc., based in Islandia, N.Y., can be reached at (800) 225-5224 or (516) 342-5224.

COLOR MONITOR

Sight for sore eyes: NEC bolsters monitor features, reduces prices

BY MARK GLASER
ASSISTANT REVIEWS EDITOR

Monitors have begun to follow the trend of the recent PC price wars — you can get more for your money if you wait. And as the prices of larger color monitors plummet, more people are looking at 17-inch monitors for general office use.

With this in mind, I took a long, hard look (till my eyes were sore) at the latest offering from one of the market leaders, NEC Technologies Inc. Its 5FGe supports the revamped MultiSync line — the "e" signifying extended refresh rates and broader scan ranges.

The first thing I noticed going from my old NEC 15-inch 4FG to the larger 17-inch 5FGe was the available space for opening up multiple windows. I could easily work between three applications, whereas two applications was stretching it on the 15-inch screen. As an editor, I appreciated seeing more text on-screen without having to scroll through documents; as a user of graphics programs, I appreciated the elbow room for images.

And I haven't even mentioned the sharp colors. My graphics were always crisp, and I never experienced flicker or color bleeding — the death knell for any monitor. The 5FGe supports up to 1,024 by 768 pixels noninterlaced at a 76-Hz vertical refresh rate (up from 72 Hz on the old FG line).

The only glaring problem I had was the glare. The polished cathode ray tube caused a lot of reflection in my fluorescent-lit office. However, with the optional monitor lens (\$70 extra) in place, the glare was cut down considerably. The tempered glass filters use High-Efficiency

Anti-reflective coating, an adaptation of the treatment used on the windows of spacecraft. (No, you don't get a bottle of Tang with each lens.)

Also available from NEC are two 15-inch models, the 3FGe and 4FGe. The former only supports 60 hertz in noninterlaced 1,024-by-768 resolution and lacks digital controls. The 4FGe supports 76 hertz and includes AccuColor color adjustments (which are strangely missing on the 5FGe).

As on the old FG series, all three "e"

My graphics were always crisp, and there was no flicker.

models feature FullScan, enabling the user to display bezel-to-bezel images, increasing the active display area. Also, all new models comply with the maximum video terminal radiation (MTR II) low-emissions standard and support XGA and XGA-2 graphics modes.

But the kicker is the price. The 3FGe's estimated list price is \$635, the 4FGe is \$755, and the 5FGe is \$1,155 — all very affordable for the high quality of their pictures. In addition, NEC offers a three-year warranty on all models.

By bringing prices down and improving features, NEC has made a solid value even more eye-catching.

NEC is located in Wood Dale, Ill., and can be reached at (800) 388-8888; fax: (800) 366-0476.

Goodnight won't let downsizing make a statistic of SAS

Computers have been messed up ever since they invented operating systems. So says Jim Goodnight, president and cofounder of the SAS Institute, who programmed IBM 1620 mainframes in college. Today, the company that followed the rise of mainframes in organizations is trying to broaden its product line. In the SAS view of client/server computing, there will be an SAS product for every client or server option out there.

That means trying to work with a lot of operating systems: Windows, Windows NT, OS/2, Unix, and even the Macintosh. And it means adding more graphical elements to the statistical package's number crunching. Editor at large Scott Mace spoke with Goodnight about the changes at SAS.

InfoWorld: What is SAS doing to address the needs of mainstream business computer users?

Goodnight: We're trying to provide the software that mainstream corporations can use, and it works on whatever hardware platforms and operating systems that they have in place. As part of our client/server strategy, we want to allow a corporation to tap into whatever resources it has with the SAS system.

InfoWorld: Are you really a player in the PC software market?

Goodnight: We have a large number of PC users. Revenues from our PC software sales are somewhere around \$50 million a year. Each year we're getting more and more of our revenues from desktop sales. And eventually I hope it's about half and half — half mainframe

and half desktop software sales.

InfoWorld: You announced recently a geographic information system based on the SAS system. Traditionally the cost of GIS data has been very high, but there seems to be some sort of price pressure now in that area. How do you see GIS pricing?

Goodnight: Well I figure that as taxpayers, we've already paid for it once. Why should we have to pay for it again?

InfoWorld: You have said that the mainframe is not dead. Do you see any indication that any of your customers are interested in turning off any mainframes?

Goodnight: No. The ones that have mainframes will have them for years and years, mainly because the applications that are already developed there are running successfully. It's a lot of work to move major applications off of the mainframe onto workstations. We spent about three months of work to get everything ironed out so that a single application could be moved over to a server.

InfoWorld: You announced recently SAS systems for NT and a collection of Unix environments. How important will NT be to your customers?

Goodnight: Well I think NT is just a natural progression of operating systems, and a number of our users will move to it. It's a 32-bit operating system, while the current Windows 3.1 environment is 16-bit. So, 32-bit operating systems just run better.

ONE ON ONE



Jim Goodnight

President
SAS Institute
Cary, N.C.
Age: 50

InfoWorld: I detect that the 16-bit Windows project was a struggle.

Goodnight: It was extremely difficult. We would have never been able to get SAS running under Windows if it were not for OS/2. We basically developed it under OS/2 and then moved it over to Windows.

Every time you turn around with Windows in a development environment, the machine falls over dead. So it

is not at all a pleasant environment to be involved in working in.

InfoWorld: Was the 16-bit OS/2 a misstep?

Goodnight: IBM should have gone to the 32-bit version of OS/2 right away and been done with it. But somehow it felt like it could milk the customers by making them all convert to a 16-bit and then convert them later to a 32-bit.

InfoWorld: You seem to feel this can go on. It has to change?

Goodnight: Oh I certainly think a lot of IS managers are tired of having to do the constant upgrades for different things. Take Microsoft: The company should just put Windows NT out and leave Windows alone. But no — Microsoft will probably do a Windows 4 and a Windows 5 and a DOS 7 and a DOS 8.1. It will go on and on — mixing up and changing what Windows sits on top of DOS and how much DOS is part of Windows.

It's very confusing, especially for third-party vendors like ourselves, to try to keep pace with the constant upgrade strategy that Microsoft uses to generate revenue.

InfoWorld: Do you feel you can lead a crusade for some change?

Goodnight: I don't really think about things like that! What we try to do is to be there when our customers need us to be there with our software. And if Microsoft is pursuing the strategy that they're pursuing, then we will try to get SAS operating on the environments that our users want us to operate on.

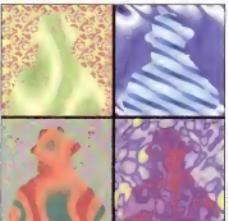
Notes From the Field / Robert X. Cringely

Did you hear the one about cc:Mail for Windows 2.0 shipping this year?

Microsoft has a new distribution method for Windows NT," I read an E-mail message I got last week. "Within 60 days you will receive a letter from Redmond containing a list of names and addresses, along with instructions to write 10 lines of C code and send them to the address at the top of the list. Add your name to the bottom and mail copies to 84 of your friends. In a few weeks you will receive 12.5 million lines of NT source code, ready for compiling and linking."

"Do not break the chain. One beta tester forgot to mail his source code and lost his system to a power surge. Another sent the letter back to Microsoft and was soon in a mental hospital, endlessly repeating the word *downsizing*."

WHO'S A SAP? That's not a great joke, but it's not a bad one, either. Here's a bad joke: Microsoft wag James Plamondon set out on May 5 on an officially sanctioned quest for a nasty joke about Amherst, Apple's document imaging architecture that competes with Redmond's Compound Document Management standard. "If we can make the name a running joke in the industry," he wrote in an E-mail broadcast to his



PHOTOGRAPH BY ROBERT X. CRINGELY

Microsoft cohorts, "then few will take the technology seriously."

Rubbish. The winning entry came from Cameron Myhrvold, who said that Amber is "petrified tree sap in which Apple will forever preserve its bugs." Weak.

REMOTE POSSIBILITIES. Not that Microsoft doesn't have some technical merit to tout. The Windows for Workgroups 3.11 beta went out last week, for example, and looks very good. New features include an MS-DOS server (286 stations

that can't run Windows can now act as WFW servers), enhanced security, 32-bit disk caching, and lots of new drivers. The part I like best is built-in remote access. Not only can you dial in to the LAN through a modem, but you can connect your notebook through the serial port on your desktop PC, rather than by using an expensive LAN adapter.

BAD NEWS. "Jokes are a waste of time," Pammy said, her blood sugar dropping in the moist Atlanta heat, balanced by a rise in her crankiness coefficient.

"You only say that because you can never remember jokes."

"You aren't worth remembering." Comdex attendees were the brunt of a few jokes last week, though they may not have known it at the time. Lotus was showing cc:Mail for Windows 2.0, which they said will ship in June. Wrong! It will be early 1994 before this overambitious release is ready.

A close look at Microsoft's Win32 software catalog, distributed at the show, reveals a few products that will never exist. KnowledgeWare's AccessPoint, for one, is long dead.

A company near death is Sitka. Folded into SunSelect a while back, the net-

working company is being dismembered and its OpenTOPS and pen-based products all have been cancelled.

MILLIONS SIGN NDA. This week Apple will finally roll out its Newton handheld at the Consumer Electronics Show in Chicago. General Magic was supposed to have done its gala product intro at the same show but didn't quite make it.

There is still a way to see GM technology in action, though. Fly to England and watch the June 7 *Horizon* episode on BBC-TV to see a product demo that could not be cancelled.

"I tell great jokes!" I protested. "Ray Noorda of Novell dies, goes to heaven and walks past a big house with the initials BG on the front gate."

"That can't be Bill Gates' house," Noorda said. "He's too young to be dead."

"Actually, that's God's house," St. Peter said. "But sometimes he thinks he's Bill Gates."

"I don't get it," Pammy said.

She wouldn't. But I'd love to get some industry secrets. Call me at (415) 312-0555; fax: (415) 358-1269; MC: CRINGE, or cringe@infoworld.com.